

=> file reg

FILE 'REGISTRY' ENTERED AT 09:52:08 ON 14 MAY 2004
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2004 American Chemical Society (ACS)

Property values tagged with IC are from the ZIC/VINITI data file
provided by InfoChem.

STRUCTURE FILE UPDATES: 13 MAY 2004 HIGHEST RN 681515-11-7
DICTIONARY FILE UPDATES: 13 MAY 2004 HIGHEST RN 681515-11-7

TSCA INFORMATION NOW CURRENT THROUGH JANUARY 6, 2004

Please note that search-term pricing does apply when
conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. For more
information enter HELP PROP at an arrow prompt in the file or refer
to the file summary sheet on the web at:
<http://www.cas.org/ONLINE/DBSS/registryss.html>

=> file caplus

FILE 'CAPLUS' ENTERED AT 09:52:13 ON 14 MAY 2004
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2004 AMERICAN CHEMICAL SOCIETY (ACS)

Copyright of the articles to which records in this database refer is
held by the publishers listed in the PUBLISHER (PB) field (available
for records published or updated in Chemical Abstracts after December
26, 1996), unless otherwise indicated in the original publications.
The CA Lexicon is the copyrighted intellectual property of the
American Chemical Society and is provided to assist you in searching
databases on STN. Any dissemination, distribution, copying, or storing
of this information, without the prior written consent of CAS, is
strictly prohibited.

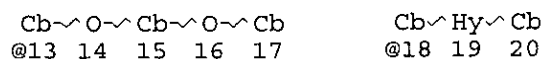
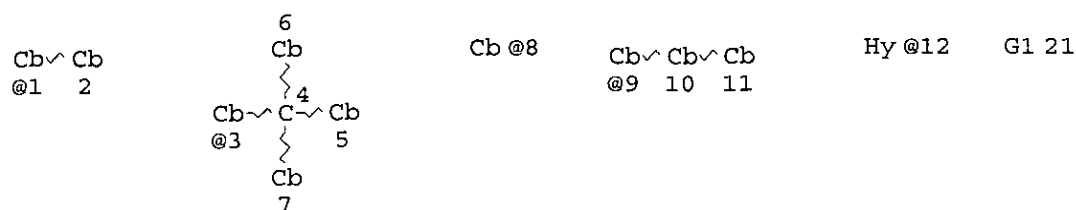
FILE COVERS 1907 - 14 May 2004 VOL 140 ISS 21
FILE LAST UPDATED: 13 May 2004 (20040513/ED)

This file contains CAS Registry Numbers for easy and accurate
substance identification.

=> d que

L1 SCR 2043
L3 STR

<05/14/2004> KOROMA - EIC 1700



VAR G1=13/18/12/9/8/3/1

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

GGCAT IS PCY AT 1

GGCAT IS PCY AT 2

GGCAT IS PCY AT 8

GGCAT IS MCY AT 9

GGCAT IS PCY AT 10

GGCAT IS MCY AT 11

GGCAT IS PCY AT 12

GGCAT IS SAT AT 15

GGCAT IS MCY AT 18

GGCAT IS PCY AT 19

GGCAT IS MCY AT 20

DEFAULT ECLEVEL IS LIMITED

ECOUNT IS M2 O AT 12

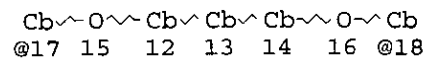
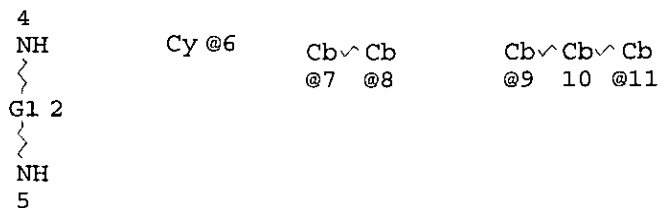
GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 21

STEREO ATTRIBUTES: NONE

L5 STR



VAR G1=6/7-4 8-5/9-4 11-5/17-5 18-4

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM
GGCAT IS MCY AT 9
GGCAT IS PCY AT 10
GGCAT IS MCY AT 11
GGCAT IS MCY AT 12
GGCAT IS PCY AT 13
GGCAT IS MCY AT 14
GGCAT IS MCY AT 17
GGCAT IS MCY AT 18
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 16

STEREO ATTRIBUTES: NONE

L7 9636 SEA FILE=REGISTRY SSS FUL L5 AND L3 AND L1
L8 6215 SEA FILE=CAPLUS ABB=ON PLU=ON L7
L23 3475 SEA FILE=CAPLUS ABB=ON PLU=ON L8 (L) (PREP OR IMF OR SPN)/RL
L24 1801 SEA FILE=CAPLUS ABB=ON PLU=ON L23 AND (?HYDROXYAMIDE? OR
?POLYBENZO? OR POLYAMIDES? OR HEAT-RESIST? OR ?ELECTRIC? OR
CIRCUIT?)
L28 85 SEA FILE=CAPLUS ABB=ON PLU=ON L24 AND ?AMIDES? AND POLYBENZO?
AND (PRODUC? OR PREP? OR MANUFACT? OR FABRICA? OR SYNTHESIZ?)
L30 42 SEA FILE=CAPLUS ABB=ON PLU=ON L28 AND ?ELECTRIC? .

=> d ti 1-42

L30 ANSWER 1 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

TI Polyamide **dielectric** compositions, their coating varnishes,
their porous **electric** insulator films with good elasticity and
heat and water resistance, and semiconductor devices having them

L30 ANSWER 2 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

TI **Heat-resistant dielectric** films having
extremely low moisture absorption and polyamide varnishes therefor

L30 ANSWER 3 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

TI Polymer compositions with excellent resistance to oxidative decomposition
and organic electroluminescent elements using them as insulating layers

L30 ANSWER 4 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

TI **Heat-resistant** insulator films with uniform fine cells
and low **dielectric** constant, polyamide compositions therefor,
and semiconductor devices therewith

L30 ANSWER 5 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

TI Insulation film materials, varnishes containing them, polyoxazole-based
microporous films with low moisture absorption **manufactured** from
them, and semiconductor devices using them

- L30 ANSWER 6 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Manufacture** of organic insulating films with good heat stability and low water absorption and of their materials
- L30 ANSWER 7 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI ✓ **Manufacture** of poly(o-hydroxyamides) and polybenzoxazoles as dielectrics
- L30 ANSWER 8 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI ✓ **Polybenzoxazole dielectrics** with self-generated pores and o-hydroxyamide monomers for **manufacture** of these porous dielectrics
- L30 ANSWER 9 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI Materials and coating varnishes for **polybenzoxazole-based electrically** insulating films and semiconductor devices
- L30 ANSWER 10 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Polybenzoxazole-based electrically** insulating materials, their varnish, **heat-resistant** porous insulator films, and semiconductor devices having them
- L30 ANSWER 11 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI Polyamide compositions, their varnishes, and **polybenzoxazole dielectric** films **manufactured** from the varnishes for semiconductor devices
- L30 ANSWER 12 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI Polyamide-based varnish compositions for insulating films and semiconductor devices using them
- L30 ANSWER 13 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI Porous **polybenzoxazole** films having extremely low permittivity, their **preparation**, and their use in semiconductor devices
- L30 ANSWER 14 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Heat-resistant polybenzoxazole** precursors with excellent moldability, **polybenzoxazoles**, and **dielectric** materials and semiconductor devices using them
- L30 ANSWER 15 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Electrically** insulating coating varnishes, and **electric** insulator films and semiconductor devices using them
- L30 ANSWER 16 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI Storage-stable materials and coating varnishes for **electrically** insulating films and semiconductor devices
- ✓ L30 ANSWER 17 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI New poly(o-hydroxyamides) for use in the **production** of **polybenzoxazoles** for use in microelectronics

- L30 ANSWER 18 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Electrically** insulating films, materials and coating varnishes for them, and semiconductor devices
- L30 ANSWER 19 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI High-temperature-resistant deep-UV-sensitive photoresist composition for forming **dielectric** or buffer layer in microelectronics
- L30 ANSWER 20 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI High-temperature-resistant photoresist composition for forming **dielectric** or buffer layer in microelectronics
- L30 ANSWER 21 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Polybenzoxazole** precursors, their condensed crosslinked **polybenzoxazoles**, insulating films, and semiconductor devices
- L30 ANSWER 22 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Polybenzoxazole** precursors and their condensate organic insulating films with good **heat resistance**
- L30 ANSWER 23 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI Composition and process for the **production** of a porous layer on substrates using the composition
- L30 ANSWER 24 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Polyhydroxyamides** for polyoxazole coating materials for electronic components
- L30 ANSWER 25 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI Method for **producing** a porous polymer coating for electronic devices
- L30 ANSWER 26 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI Insulation films for semiconductor devices with good heat and moisture resistance and benzoxazole ring-formable polyamide varnishes for their **manufacture**
- L30 ANSWER 27 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI Polyamide-based copolymers for insulator films, their coating varnishes, and porous insulator films thereof
- L30 ANSWER 28 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Heat-resistant** coating varnishes with low **dielectric** constant containing **polybenzoxazole** precursors and their insulating films with micropores
- L30 ANSWER 29 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI Heat- and water-resistant polyamide compositions and their porous **polybenzoxazole electric** insulator films
- L30 ANSWER 30 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI Polyamide compositions and **electrically** insulating microporous

film obtained from the compositions for electronic devices

- L30 ANSWER 31 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI Polyamide-containing material for insulating film, coating varnish for insulating film, and insulating film and semiconductor device using the same
- L30 ANSWER 32 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI Precursor of a **heat resistant** resin, **heat resistant** resin, insulating film, and semiconductor device
- L30 ANSWER 33 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Polybenzoxazole** resins and their precursors with good thermal and **electric** characteristics and low water absorption
- L30 ANSWER 34 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Heat-resistant** resin compositions with improved adhesion with substrates
- L30 ANSWER 35 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Heat-resistant** resin or precursor compositions containing photopolymerable compounds for **electric** insulators
- L30 ANSWER 36 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Heat-resistant** branched polymer compositions with low **dielectric** constant
- L30 ANSWER 37 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Heat-resistant** resin precursor compositions and preparation of **heat-resistant** resins therefrom
- L30 ANSWER 38 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI Naphthalene-based **polybenzoxazole** precursors and **heat-resistant electrically** insulating **polybenzoxazoles** therefrom
- L30 ANSWER 39 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Heat-resistant** phenylquinoxaline copolymers useful as **dielectrics**
- L30 ANSWER 40 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI Copolymers containing **polybenzoxazole**, **polybenzothiazole** and polybenzimidazole moieties
- L30 ANSWER 41 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI Polyamic acids from **diaminocarboxamides**, diamines, and tetracarboxylic dianhydrides
- L30 ANSWER 42 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
TI Comparative study of the photodegradation of **polybenzoxazoles** and related model compounds. Stabilization of **polybenzoxazoles**

=> d ibib abs hitstr ind total 130

L30 ANSWER 1 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2004:305598 CAPLUS

DOCUMENT NUMBER: 140:322525

TITLE: Polyamide **dielectric** compositions, their coating varnishes, their porous **electric** insulator films with good elasticity and heat and water resistance, and semiconductor devices having them

INVENTOR(S): Ono, Koji

PATENT ASSIGNEE(S): Sumitomo Bakelite Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 32 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004119080	A2	20040415	JP 2002-278044	20020924
PRIORITY APPLN. INFO.:			JP 2002-278044	20020924

AB The compns. contain polymers that are **manufactured** from (A) **polyamides** $[\text{NHX}(\text{OH})2\text{NHCOYCO}]_m[\text{NHX}(\text{OH})2\text{NHCOZCO}]_n[\text{NHX}(\text{OH})2\text{NHCOC}_6\text{H}_5\text{-a}[\text{CONHX}(\text{OH})2\text{NH}]_a\text{-1C.tplbond.CC}_6\text{H}_5\text{-b(CO)b}]_c$ [X = tetravalent group selected from benzenetetrayl, biphenyltetrayl, etc.; Y = divalent group selected from (alkyl)ethynylphenylene, (alkyl)ethynylbiphenylene, (alkyl)ethynyl naphthylene, (alkyl)ethynylsulfonylbiphenylene, diphenyleneacetylene, etc.; Z = phenylene, naphthylene, biphenylene, cyclohexylene, etc.; a = 2-5; b = 1-5, c = 1-100; m > 0; n ≥ 0; m + n = 2-1000; m/(m + n) = 0.05-1] **prepared** from bisaminophenols and carboxylic acids containing polybasic carboxylic acids $(\text{HOCO})_a\text{C}_6\text{H}_5\text{-aC.tplbond.CC}_6\text{H}_5\text{-b(CO}_2\text{H)b}$ (a, b = same as above) and (B) reactive oligomers having functional groups reactive with carboxy, amino, or OH in the **polyamides**. Thus, 2,2-bis(3-amino-4-hydroxyphenyl)hexafluoropropane-5-ethynylisophthaloyl dichloride-isophthaloyl dichloride-5-phenylethynylisophthaloyl dichloride-3,5,4'-tolanetricarboxylic acid trichloride copolymer was reacted with polypropylene glycol bis(2-aminopropyl) ether, coated on a Si wafer, and heated at 300° then at 400° for decomposing polypropylene units to give a porous **polybenzoxazole** film showing Tg >450°, moisture absorption 0.2%, elastic modulus 3.0 GPa, and relative **dielec.** constant 1.81.

IT 677716-75-5P

RL: CPS (Chemical process); DEV (Device component use); **IMF** (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); **PREP** (Preparation); PROC (Process); USES (Uses)

(polyacetylene-**polybenzoxazole**-based porous **elec.**

insulator films with good elasticity and heat and water resistance for

semiconductor devices)

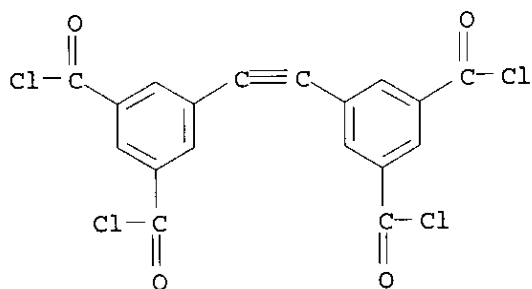
RN 677716-75-5 CAPLUS

CN 2,7-Biphenylenedicarbonyl dichloride, polymer with α -(2-aminomethylethyl)- ω -(2-aminomethylethoxy)poly[oxy(methyl-1,2-ethanediyl)], 3,3'-diamino[1,1'-biphenyl]-4,4'-diol and 5,5'-(1,2-ethynediyl)bis[1,3-benzenedicarbonyl dichloride] (9CI) (CA INDEX NAME)

CM 1

CRN 677716-74-4

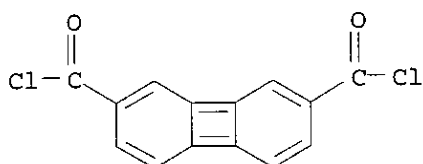
CMF C18 H6 Cl4 O4



CM 2

CRN 69417-81-8

CMF C14 H6 Cl2 O2

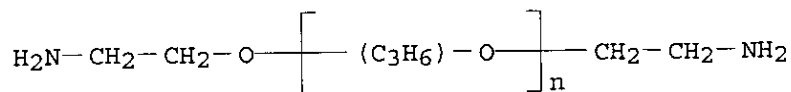


CM 3

CRN 9046-10-0

CMF (C3 H6 O)_n C6 H16 N2 O

CCI IDS, PMS

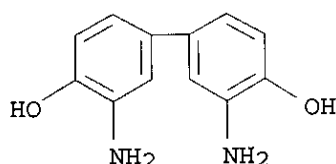


2 (D1-Me)

CM 4

CRN 4194-40-5

CMF C12 H12 N2 O2



IC ICM H01B003-30

ICS C08G073-22; H01L021-312; H01L021-768

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 76

ST hydroxy polyamide polyacetylene porous **dielec** film;
semiconductor device **elec** insulator **polybenzoxazole**
porosity; polyoxyalkylene **polybenzoxazole** polyacetylene decompn
porous **dielec**

IT Porous materials
(films; polyacetylene-**polybenzoxazole**-based porous
elec. insulator films with good elasticity and heat and water
resistance for semiconductor devices)

IT **Polyamides**, processes
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical,
engineering or chemical process); PREP (Preparation); PROC (Process)
(polyacetylene-, fluorine-containing, OH-containing; polyacetylene-
polybenzoxazole-based porous **elec.** insulator films
with good elasticity and heat and water resistance for semiconductor
devices)

IT **Polybenzoxazoles**
RL: CPS (Chemical process); DEV (Device component use); IMF (Industrial
manufacture); PEP (Physical, engineering or chemical process); TEM
(Technical or engineered material use); PREP (Preparation); PROC
(Process); USES (Uses)
(polyacetylene-, fluorine-containing; polyacetylene-**polybenzoxazole**
-based porous **elec.** insulator films with good elasticity and
heat and water resistance for semiconductor devices)

IT Fluoropolymers, processes
Polyoxyalkylenes, processes

RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)
(polyacetylene-polyamide-, OH-containing; polyacetylene-
polybenzoxazole-based porous **elec.** insulator films
with good elasticity and heat and water resistance for semiconductor devices)

IT Polyoxyalkylenes, processes

RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)
(polyacetylene-polyamide-, fluorine-containing, OH-containing;

polyacetylene-

polybenzoxazole-based porous **elec.** insulator films
with good elasticity and heat and water resistance for semiconductor devices)

IT Fluoropolymers, processes

RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)
(polyacetylene-polyamide-polyoxyalkylene-, OH-containing; polyacetylene-
polybenzoxazole-based porous **elec.** insulator films
with good elasticity and heat and water resistance for semiconductor devices)

IT Polyoxyalkylenes, uses

RL: CPS (Chemical process); DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(polyacetylene-**polybenzoxazole**-, fluorine-containing;
polyacetylene-**polybenzoxazole**-based porous **elec.**
insulator films with good elasticity and heat and water resistance for semiconductor devices)

IT Fluoropolymers, uses

Polyoxyalkylenes, uses

RL: CPS (Chemical process); DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(polyacetylene-**polybenzoxazole**-; polyacetylene-
polybenzoxazole-based porous **elec.** insulator films
with good elasticity and heat and water resistance for semiconductor devices)

IT **Electric** insulators

Semiconductor devices

(polyacetylene-**polybenzoxazole**-based porous **elec.**
insulator films with good elasticity and heat and water resistance for semiconductor devices)

IT Fluoropolymers, uses

RL: CPS (Chemical process); DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)

(polyacetylene-**polybenzoxazole**-polyoxyalkylene-;
polyacetylene-**polybenzoxazole**-based porous **elec.**

insulator films with good elasticity and heat and water resistance for semiconductor devices)

IT **Polyamides, processes**

RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)
(polyacetylene-polyoxyalkylene-, OH-containing; polyacetylene-
polybenzoxazole-based porous **elec.** insulator films
with good elasticity and heat and water resistance for semiconductor devices)

IT **Polyamides, processes**

RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)
(polyacetylene-polyoxyalkylene-, fluorine-containing, OH-containing;
polyacetylene-**polybenzoxazole**-based porous **elec.**
insulator films with good elasticity and heat and water resistance for semiconductor devices)

IT **Polybenzoxazoles**

RL: CPS (Chemical process); DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(polyacetylene-polyoxyalkylene-, fluorine-containing; polyacetylene-
polybenzoxazole-based porous **elec.** insulator films
with good elasticity and heat and water resistance for semiconductor devices)

IT **Polybenzoxazoles**

RL: CPS (Chemical process); DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(polyacetylene-polyoxyalkylene-; polyacetylene-**polybenzoxazole**-based porous **elec.** insulator films with good elasticity and heat and water resistance for semiconductor devices)

IT **Polyacetylenes, processes**

RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)
(polyamide-, fluorine-containing, OH-containing; polyacetylene-
polybenzoxazole-based porous **elec.** insulator films
with good elasticity and heat and water resistance for semiconductor devices)

IT **Polyacetylenes, processes**

RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)
(polyamide-polyoxyalkylene-, OH-containing; polyacetylene-
polybenzoxazole-based porous **elec.** insulator films
with good elasticity and heat and water resistance for semiconductor devices)

IT **Polyacetylenes, processes**

RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)
(polyamide-polyoxyalkylene-, fluorine-containing, OH-containing;
polyacetylene-

- polybenzoxazole-based porous elec. insulator films**
with good elasticity and heat and water resistance for semiconductor devices)
- IT Polyacetylenes, uses
RL: CPS (Chemical process); DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(**polybenzoxazole-**, fluorine-containing; polyacetylene-
polybenzoxazole-based porous elec. insulator films
with good elasticity and heat and water resistance for semiconductor devices)
- IT Polyacetylenes, uses
RL: CPS (Chemical process); DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(**polybenzoxazole-polyoxyalkylene-**, fluorine-containing;
polyacetylene-**polybenzoxazole-based porous elec.**
insulator films with good elasticity and heat and water resistance for semiconductor devices)
- IT Polyacetylenes, uses
RL: CPS (Chemical process); DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(**polybenzoxazole-polyoxyalkylene-**; polyacetylene-
polybenzoxazole-based porous elec. insulator films
with good elasticity and heat and water resistance for semiconductor devices)
- IT Polyethers, uses
RL: CPS (Chemical process); DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(polyester-, reaction **products** with OH-containing
polyamides; polyacetylene-**polybenzoxazole-based**
porous elec. insulator films with good elasticity and heat
and water resistance for semiconductor devices)
- IT Polyesters, uses
RL: CPS (Chemical process); DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(polyether-, reaction **products** with OH-containing
polyamides; polyacetylene-**polybenzoxazole-based**
porous elec. insulator films with good elasticity and heat
and water resistance for semiconductor devices)
- IT Films
(porous; polyacetylene-**polybenzoxazole-based porous**
elec. insulator films with good elasticity and heat and water
resistance for semiconductor devices)

IT Polyesters, uses
 Polyurethanes, uses
 RL: CPS (Chemical process); DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
 (reaction products with OH-containing polyamides;
 polyacetylene-polybenzoxazole-based porous elec.
 insulator films with good elasticity and heat and water resistance for semiconductor devices)

IT 9003-53-6DP, Polystyrene, aminobenzoate-terminated, reaction products with OH-containing polyamides 25248-42-4DP, Polycaprolactone, sru, polyols, reaction products with OH-containing polyamides 677716-71-1P 677716-73-3P 677716-75-5P 677716-76-6P 677716-77-7DP, reaction products with aminobenzoate-terminated polystyrene 677716-78-8P 677716-79-9P
 RL: CPS (Chemical process); DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
 (polyacetylene-polybenzoxazole-based porous elec.
 insulator films with good elasticity and heat and water resistance for semiconductor devices)

L30 ANSWER 2 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2004:219355 CAPLUS

DOCUMENT NUMBER: 140:271939

TITLE: Heat-resistant dielectric
 films having extremely low moisture absorption and polyamide varnishes therefor

INVENTOR(S): Hase, Yoko; Enoki, Naoshi

PATENT ASSIGNEE(S): Sumitomo Bakelite Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 27 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004087336	A2	20040318	JP 2002-247625	20020827
PRIORITY APPLN. INFO.:			JP 2002-247625	20020827

AB Solvent-based varnishes containing polyamide [HNX(OR1)(OR2)NHC(O)Y1CO]m[HNX(OR3)(OR4)NHC(O)Y2CO]n [m > 0; n ≥ 0; 2 ≤ m + n ≤ 1000; 0.05 ≤ m/(m + n) ≤ 1; R1-R4 = H, monovalent organic group; X = tetravalent bridging group (e.g., benzenetetrayl, biphenyltetrayl, etc.); Y1 = (substituted) ethynyl-containing bivalent bridging group (e.g., ethynylphenylene) or biphenylenedicarboxylic acid residue; Y2 = bivalent bridging group (e.g., phenylene, naphthalenediyl, cyclohexylene, etc.)] and pyrolytic oligomers (e.g., polyoxyalkylene, PMMA, poly(α-methylstyrene), polyesters, etc.) are claimed. The oligomers may show Mn

100-20,000. Crosslinked **polybenzoxazole** films formed from the varnishes, with pore diameter $\leq 1 \mu\text{m}$ (preferably $\leq 20 \text{ nm}$) and porosity 5-70% (preferably 5-40%), are also claimed. The films are useful for cover films of clad laminates, solder resists, liquid crystal alignment layers, etc. Thus, a β -butyrolactone-thinned varnish of 0.64 g 3,3'-diamino-4,4'-dihydroxybiphenyl-4-ethynyl-2,6-naphthalenedicarboxylic dichloride copolymer (M_w 25,600) and 0.36 g styrene oligomer (M_n 9600) was applied on a Si wafer and baked at 300° to give a **polybenzoxazole** film having dielec. constant (1 MHz) 2.10, pore diameter 15 nm, $T_g > 450^\circ$, and moisture absorption 0.2%.

IT 607739-27-5P 672291-30-4P 672291-31-5P
672291-33-7P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(cured; heat-stable nanoporous crosslinked **polybenzoxazole** films prepared from varnishes containing pyrolytic pore formers)

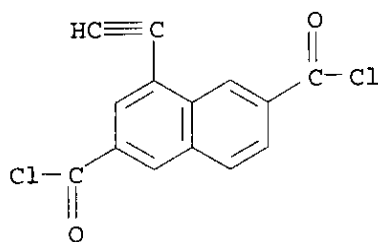
RN 607739-27-5 CAPLUS

CN 2,6-Naphthalenedicarbonyl dichloride, 4-ethynyl-, polymer with 3,3'-diamino[1,1'-biphenyl]-4,4'-diol (9CI) (CA INDEX NAME)

CM 1

CRN 405931-94-4

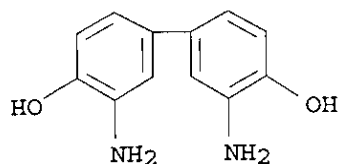
CMF C14 H6 Cl2 O2



CM 2

CRN 4194-40-5

CMF C12 H12 N2 O2



RN 672291-30-4 CAPLUS

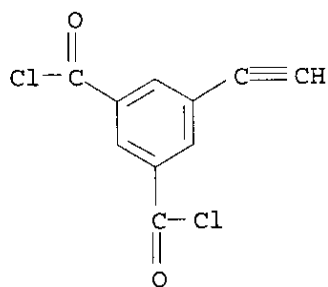
CN 1,3-Benzenedicarbonyl dichloride, 5-ethynyl-, polymer with

4,4'-(9H-fluoren-9-ylidene)bis[2-aminophenol] (9CI) (CA INDEX NAME)

CM 1

CRN 393543-05-0

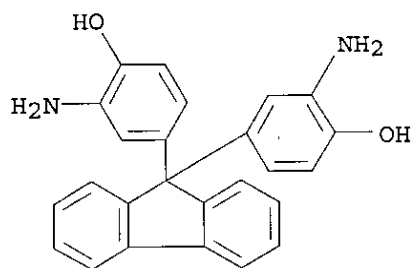
CMF C10 H4 Cl2 O2



CM 2

CRN 20638-07-7

CMF C25 H20 N2 O2



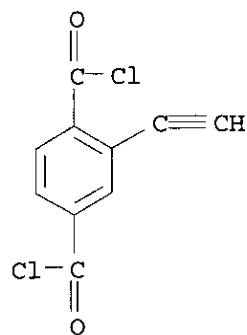
RN 672291-31-5 CAPLUS

CN 2,6-Naphthalenedicarbonyl dichloride, polymer with 4,4'-diamino[1,1'-biphenyl]-3,3'-diol and 2-ethynyl-1,4-benzenedicarbonyl dichloride (9CI)
(CA INDEX NAME)

CM 1

CRN 393543-09-4

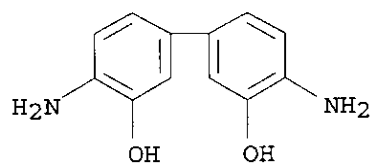
CMF C10 H4 Cl2 O2



CM 2

CRN 2373-98-0

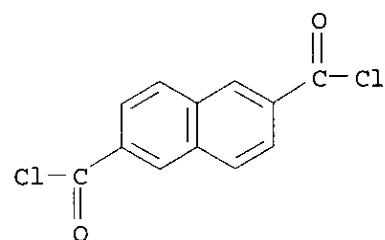
CMF C12 H12 N2 O2



CM 3

CRN 2351-36-2

CMF C12 H6 Cl2 O2



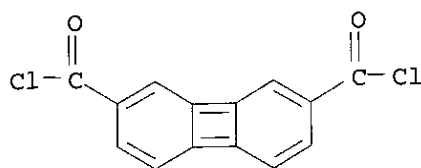
RN 672291-33-7 CAPLUS

CN 2,7-Biphenylenedicarbonyl dichloride, polymer with 3,3'-diamino[1,1'-biphenyl]-4,4'-diol (9CI) (CA INDEX NAME)

CM 1

CRN 69417-81-8

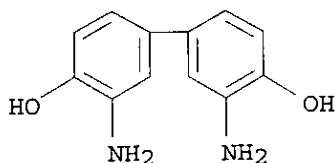
CMF C14 H6 Cl2 O2



CM 2

CRN 4194-40-5

CMF C12 H12 N2 O2



- IC ICM H01B003-30
ICS C08G069-32; C09D005-25; C09D179-04; C09D179-08; C09D201-00;
H01B003-00; H01L021-312
- CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 76
- ST nanoporous **polybenzoxazole** film moisture absorption minimized;
heat resistant crosslinked **polybenzoxazole**
film nanoporous; pyrolytic oligomer polyamide varnish
polybenzoxazole insulator; diaminodihydroxybiphenyl
ethynylnaphthalenedicarboxylic acid **polybenzoxazole** polyamide
varnish
- IT **Heat-resistant materials**
(**dielec.**, films; heat-stable nanoporous crosslinked
polybenzoxazole films **prepared** from varnishes containing
pyrolytic pore formers)
- IT Porous materials
(films, nanoporous, **dielec.**; heat-stable nanoporous
crosslinked **polybenzoxazole** films **prepared** from
varnishes containing pyrolytic pore formers)
- IT **Electric insulators**
(**heat-resistant**, films; heat-stable nanoporous
crosslinked **polybenzoxazole** films **prepared** from
varnishes containing pyrolytic pore formers)
- IT **Polybenzoxazoles**
RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(heat-stable nanoporous crosslinked **polybenzoxazole** films
prepared from varnishes containing pyrolytic pore formers)

- IT **Polyamides, uses**
 RL: RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
 (hydroxy-containing, varnishes; heat-stable nanoporous crosslinked **polybenzoxazole** films **prepared** from varnishes containing pyrolytic pore formers)
- IT **Polyesters, uses**
 Polyoxyalkylenes, uses
 Polyurethanes, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (oligomeric, pore formers; heat-stable nanoporous crosslinked **polybenzoxazole** films **prepared** from varnishes containing pyrolytic pore formers)
- IT **Cardo polymers**
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (polybenzoxazoles; heat-stable nanoporous crosslinked **polybenzoxazole** films **prepared** from varnishes containing pyrolytic pore formers)
- IT **Polyethers, uses**
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (polybenzoxazole-, e; heat-stable nanoporous crosslinked **polybenzoxazole** films **prepared** from varnishes containing pyrolytic pore formers)
- IT **Polyethers, uses**
 RL: NUU (Other use, unclassified); USES (Uses)
 (polyester-, oligomeric, pore formers; heat-stable nanoporous crosslinked **polybenzoxazole** films **prepared** from varnishes containing pyrolytic pore formers)
- IT **Polybenzoxazoles**
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (polyether-, e; heat-stable nanoporous crosslinked **polybenzoxazole** films **prepared** from varnishes containing pyrolytic pore formers)
- IT **Polyesters, uses**
 RL: NUU (Other use, unclassified); USES (Uses)
 (polyether-, oligomeric, pore formers; heat-stable nanoporous crosslinked **polybenzoxazole** films **prepared** from varnishes containing pyrolytic pore formers)
- IT **Polyoxyalkylenes, uses**
 RL: NUU (Other use, unclassified); USES (Uses)
 (pore formers; heat-stable nanoporous crosslinked **polybenzoxazole** films **prepared** from varnishes containing pyrolytic pore formers)
- IT **Films**
 (porous, nanoporous, dielec.; heat-stable nanoporous crosslinked **polybenzoxazole** films **prepared** from varnishes containing pyrolytic pore formers)
- IT 607739-27-5P 672291-29-1P 672291-30-4P
 672291-31-5P 672291-32-6P 672291-33-7P 672291-34-8P

- RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(cured; heat-stable nanoporous crosslinked **polybenzoxazole** films **prepared** from varnishes containing pyrolytic pore formers)
- IT 608143-83-5P 672291-35-9P 672291-36-0P 672291-37-1P 672291-38-2P
672308-99-5P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(heat-stable nanoporous crosslinked **polybenzoxazole** films **prepared** from varnishes containing pyrolytic pore formers)
- IT 9003-53-6P, Polystyrene
RL: IMF (Industrial manufacture); NUU (Other use, unclassified); PREP (Preparation); USES (Uses)
(oligomeric, pore formers; heat-stable nanoporous crosslinked **polybenzoxazole** films **prepared** from varnishes containing pyrolytic pore formers)
- IT 9011-14-7, Poly(methyl methacrylate) 24980-41-4, Polycaprolactone
25014-31-7, Poly(α -methylstyrene) 25248-42-4, Polycaprolactone
RL: NUU (Other use, unclassified); USES (Uses)
(oligomeric, pore formers; heat-stable nanoporous crosslinked **polybenzoxazole** films **prepared** from varnishes containing pyrolytic pore formers)
- IT 25322-69-4, Polypropylene glycol
RL: NUU (Other use, unclassified); USES (Uses)
(pore formers; heat-stable nanoporous crosslinked **polybenzoxazole** films **prepared** from varnishes containing pyrolytic pore formers)
- IT 96-48-0, γ -Butyrolactone
RL: NUU (Other use, unclassified); USES (Uses)
(solvents; heat-stable nanoporous crosslinked **polybenzoxazole** films **prepared** from varnishes containing pyrolytic pore formers)
- IT 106392-12-5, Ethylene oxide-propylene oxide block copolymer
RL: NUU (Other use, unclassified); USES (Uses)
(triblock, pore formers; heat-stable nanoporous crosslinked **polybenzoxazole** films **prepared** from varnishes containing pyrolytic pore formers)

L30 ANSWER 3 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2004:32658 CAPLUS

DOCUMENT NUMBER: 140:101757

TITLE: Polymer compositions with excellent resistance to oxidative decomposition and organic electroluminescent elements using them as insulating layers

INVENTOR(S): Arai, Nana; Tomikawa, Masao; Okuda, Ryoji

PATENT ASSIGNEE(S): Toray Industries, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 32 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004010696	A2	20040115	JP 2002-163998	20020605
PRIORITY APPLN. INFO.:			JP 2002-163998	20020605

AB The compns., preferably containing curing agents with groups CH₂OR (R = H, C1-20 alkyl, C4-20 alicyclic group, RbCO; Rb = C1-20 alkyl), give films with thickness 0.05-20.0 μm showing thickness reduction rate during UV ozone treatment ≤0.015 μm/min or thickness reduction rate during O plasma treatment ≤0.005 μm/min.

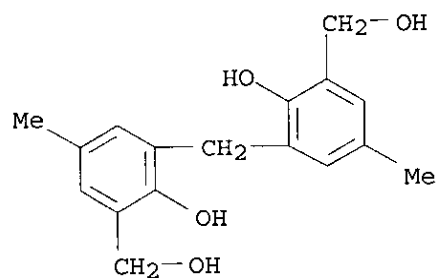
IT **641629-23-4P**
 RL: IMF (Industrial manufacture); POF (Polymer in formulation);
 TEM (Technical or engineered material use); PREP (Preparation);
 USES (Uses)
 (polymer compns. with good oxidative decomposition resistance for dielec. films for organic electroluminescent elements)

RN 641629-23-4 CAPLUS

CN 1,2-Benzenedicarboxylic acid, 4,4'-carbonylbis-, polymer with 1H,3H-benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, 3,5-diaminobenzoic acid, 1,2-ethanediyl bis(2-methyl-2-propenoate), 2-hydroxyethyl 2-methyl-2-propenoate, 3,3'-methylenebis[2-hydroxy-5-methylbenzenemethanol], 4,4'-oxybis[benzenamine], 2,2'-(phenylimino)bis[ethanol] and 3-(triethoxysilyl)-1-propanamine (9CI) (CA INDEX NAME)

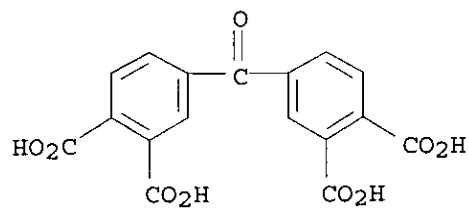
CM 1

CRN 22247-58-1
 CMF C17 H20 O4



CM 2

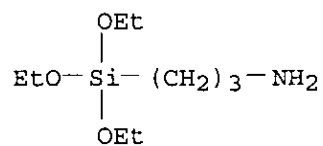
CRN 2479-49-4
 CMF C17 H10 O9



CM 3

CRN 919-30-2

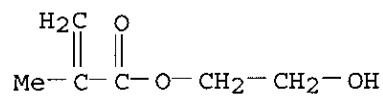
CMF C9 H23 N O3 Si



CM 4

CRN 868-77-9

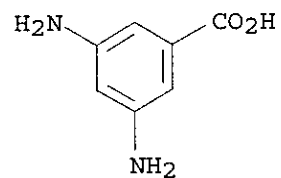
CMF C6 H10 O3



CM 5

CRN 535-87-5

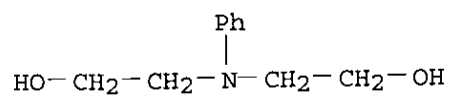
CMF C7 H8 N2 O2



CM 6

CRN 120-07-0

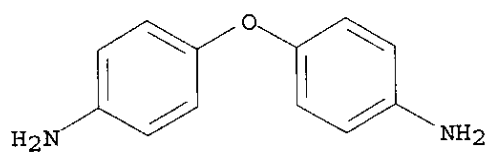
CMF C10 H15 N O2



CM 7

CRN 101-80-4

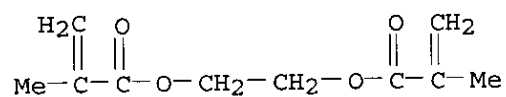
CMF C12 H12 N2 O



CM 8

CRN 97-90-5

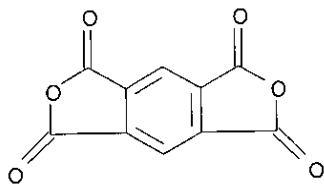
CMF C10 H14 O4



CM 9

CRN 89-32-7

CMF C10 H2 O6



IC ICM C08L079-08
ICS C08K005-13; H05B033-14; H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 38, 76

ST **elec** insulator polymer oxidative decompn resistance; UV ozone resistance polyimide thickness retention; electroluminescent device **dielec** film plasma treatment

IT Aminoplasts
RL: RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
(Nikalac MX 290, curing agent; polymer compns. with good oxidative decomposition resistance for **dielec.** films for organic electroluminescent elements)

IT Acrylic polymers, uses
Silsesquioxanes
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(cured; polymer compns. with good oxidative decomposition resistance for **dielec.** films for organic electroluminescent elements)

IT Phenolic resins, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(epoxy; polymer compns. with good oxidative decomposition resistance for **dielec.** films for organic electroluminescent elements)

IT Phenolic resins, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(novolak, cresol-based, cured; polymer compns. with good oxidative decomposition resistance for **dielec.** films for organic electroluminescent elements)

IT Epoxy resins, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(phenolic; polymer compns. with good oxidative decomposition resistance for **dielec.** films for organic electroluminescent elements)

IT Polysiloxanes, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyamide-polyether-polyimide-, fluorine-containing, cured; polymer compns. with good oxidative decomposition resistance for **dielec.** films for organic electroluminescent elements)

IT Fluoropolymers, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyamide-polyether-polyimide-polysiloxane-, cured; polymer compns. with good oxidative decomposition resistance for **dielec.** films for organic electroluminescent elements)

IT Polyimides, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyamide-polyether-polysiloxane-, fluorine-containing, cured; polymer

compns. with good oxidative decomposition resistance for **dielec.**
films for organic electroluminescent elements)

IT Polysiloxanes, uses

RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyamide-polyimide-, fluorine-containing, cured; polymer compns. with
good oxidative decomposition resistance for **dielec.** films for organic
electroluminescent elements)

IT Polyethers, uses

RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyamide-polyimide-polysiloxane-, fluorine-containing, cured; polymer
compns. with good oxidative decomposition resistance for **dielec.**
films for organic electroluminescent elements)

IT Polyimides, uses

RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyamide-polysiloxane-, fluorine-containing, cured; polymer compns. with
good oxidative decomposition resistance for **dielec.** films for organic
electroluminescent elements)

IT Polyethers, uses

RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(**polybenzoxazole**-, cured; polymer compns. with good oxidative
decomposition resistance for **dielec.** films for organic
electroluminescent elements)

IT Polybenzoxazoles

RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-, cured; polymer compns. with good oxidative decomposition
resistance for **dielec.** films for organic electroluminescent
elements)

IT Polyamides, uses

RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-polyimide-polysiloxane-, fluorine-containing, cured; polymer
compns. with good oxidative decomposition resistance for **dielec.**
films for organic electroluminescent elements)

IT Polyamides, uses

RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyimide-polysiloxane-, fluorine-containing, cured; polymer compns. with
good oxidative decomposition resistance for **dielec.** films for organic
electroluminescent elements)

IT Dielectric films

Electroluminescent devices
(polymer compns. with good oxidative decomposition resistance for
dielec. films for organic electroluminescent elements)

IT 91-04-3, 2,6-Bis(hydroxymethyl)-p-cresol

RL: RCT (Reactant); TEM (Technical or engineered material use); RACT
(Reactant or reagent); USES (Uses)
(DML-PC, curing agent; polymer compns. with good oxidative decomposition

- resistance for **dielec.** films for organic electroluminescent elements)
- IT 9011-05-6, Nikalac MX 270
 RL: RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
 (Nikalac MX 290, curing agent; polymer compns. with good oxidative decomposition resistance for **dielec.** films for organic electroluminescent elements)
- IT 2768-02-7, KBM 1003
 RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
 (coupling agent; polymer compns. with good oxidative decomposition resistance for **dielec.** films for organic electroluminescent elements)
- IT 101-80-4DP, 4,4'-Diaminodiphenyl ether, reaction **products** with acid anhydride and diamine 2420-87-3DP, 3,3',4,4'-Biphenyltetracarboxylic dianhydride, reaction **products** with diamines 25035-81-8P, Methacrylic acid-methyl methacrylate-styrene copolymer 27029-76-1P, m-Cresol-p-cresol-formaldehyde copolymer 129197-38-2DP, reaction **products** with biphenyltetracarboxylic dianhydride and diamine 162816-07-1P 223255-30-9DP, reaction **products** with diamines 347147-75-5P 645385-91-7P
 RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (cured; polymer compns. with good oxidative decomposition resistance for **dielec.** films for organic electroluminescent elements)
- IT 22247-58-1, 2,2'-Methylenebis[6-(hydroxymethyl)-4-methylphenol] 32449-09-5, 2,6-Bismethoxymethyl-p-cresol 109129-38-6 421546-91-0 643090-86-2, Nikalac MX 750LM
 RL: RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
 (curing agent; polymer compns. with good oxidative decomposition resistance for **dielec.** films for organic electroluminescent elements)
- IT 122-04-3, 4-Nitrobenzoyl chloride 3867-55-8, Trimellitic chloride 83558-87-6, 2,2-Bis(3-amino-4-hydroxyphenyl)hexafluoropropane
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (for monomer **preparation**; polymer compns. with good oxidative decomposition resistance for **dielec.** films for organic electroluminescent elements)
- IT 3584-23-4D, TAZ 104, esters 20546-03-6D, 1,2-Naphthoquinone-2-diazide-5-sulfonic acid, esters
 RL: CAT (Catalyst use); USES (Uses)
 (photoacid generator; polymer compns. with good oxidative decomposition resistance for **dielec.** films for organic electroluminescent elements)
- IT 641629-22-3P 641629-23-4P
 RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (polymer compns. with good oxidative decomposition resistance for **dielec.** films for organic electroluminescent elements)

L30 ANSWER 4 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2004:20171 CAPLUS

DOCUMENT NUMBER: 140:95140

TITLE: **Heat-resistant** insulator films
with uniform fine cells and low **dielectric**
constant, polyamide compositions therefor, and
semiconductor devices therewith

INVENTOR(S): Murayama, Kazumoto; Oki, Hiromi; Saito, Hidenori;
Enoki, Naoshi

PATENT ASSIGNEE(S): Sumitomo Bakelite Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 31 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

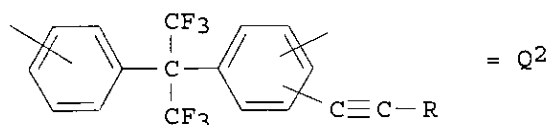
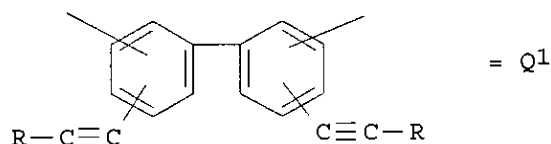
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004006269	A2	20040108	JP 2003-78917	20030320
PRIORITY APPLN. INFO.:			JP 2002-79108	A 20020320

GI



AB The compns. contain **polyamides** with
[NHX(OH)2COY1CO]m(NHZ1NHCOY2CO)n(OZ2OCOY3CO)k units [X = 1,2,4,5- or
1,2,3,4-tetravalent benzene, 3,3',4,4'-tetravalent biphenyl, etc.; Y1-Y3 =
Q1, Q2, etc. (other Markush included); Z1, Z2 = divalent heat-decomposable
group; m > 0; n > 0; k ≥ 0; 2 ≤ m + n + k ≤ 1000; 0.4
≤ m/(m + n + k) ≤ 0.95] including poly(NHZ1NHCOY2CO) and/or
poly(OZ2OCOY3CO) structure. Thus, 9,9-bis(4-amino-3-
hydroxyphenyl)fluorene was polymerized with 4-ethynyl-2,6-
naphthalenedicarboxylic acid dichloride and 4-aminobenzoate-terminated
styrene oligomer to give block polyamide, which was dissolved in NMP,
applied on Al-deposited Si wafer, and baked to give porous

polybenzoxazole film showing uniform cell, Tg 450°, and dielec. constant 2.2 at 1 MHz between Al electrode prepared on the film and the Al deposition layer.

IT 640750-13-6P 640750-16-9P 640750-72-7P,
9,9-Bis(4-amino-3-hydroxyphenyl)fluorene-ED 2003-4,4'-tolane dicarboxylic acid dichloride block copolymer 640750-73-8P,
9,9-Bis(4-amino-3-hydroxyphenyl)fluorene-ED 2003-5-ethynylisophthalic acid dichloride-5-phenylethynyl isophthalic acid dichloride-polypropylene glycol bis(2-aminopropyl) ether block copolymer 641611-57-6P
RL: IMF (Industrial manufacture); PRP (Properties); TEM
(Technical or engineered material use); PREP (Preparation); USES
(Uses)

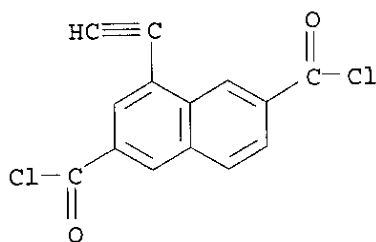
(polyamide compns. for heat-resistant insulator
films with uniform fine cells and low dielec. constant useful
for semiconductor devices)

RN 640750-13-6 CAPLUS
CN 2,6-Naphthalenedicarbonyl dichloride, 4-ethynyl-, polymer with
ethenylbenzene and 3,3'-(9H-fluoren-9-ylidene)bis[6-aminophenol], block
(9CI) (CA INDEX NAME)

CM 1

CRN 405931-94-4

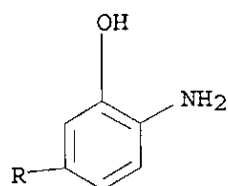
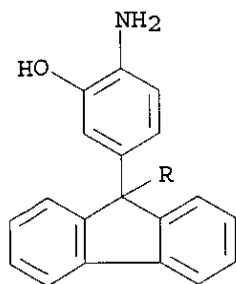
CMF C14 H6 Cl2 O2



CM 2

CRN 152480-72-3

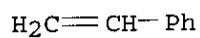
CMF C25 H20 N2 O2



CM 3

CRN 100-42-5

CMF C8 H8



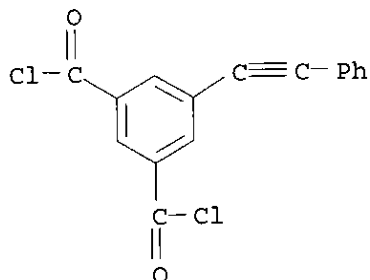
RN 640750-16-9 CAPLUS

CN 1,3-Benzenedicarbonyl dichloride, 5-ethynyl-, polymer with
1,4-benzenedicarbonyl dichloride, ethenylbenzene, 3,3'-(9H-fluoren-9-
ylidene)bis[6-aminophenol] and 5-(phenylethynyl)-1,3-benzenedicarbonyl
dichloride, block (9CI) (CA INDEX NAME)

CM 1

CRN 393543-14-1

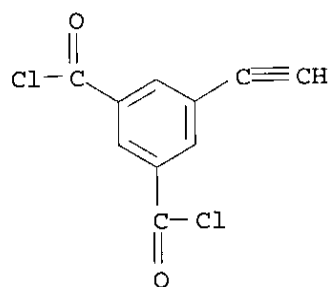
CMF C16 H8 Cl2 O2



CM 2

CRN 393543-05-0

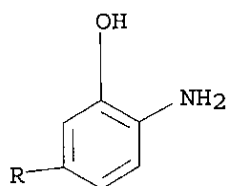
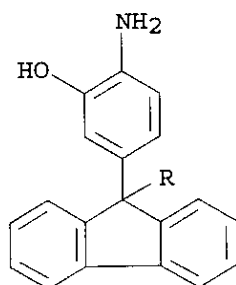
CMF C10 H4 Cl2 O2



CM 3

CRN 152480-72-3

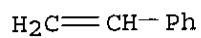
CMF C25 H20 N2 O2



CM 4

CRN 100-42-5

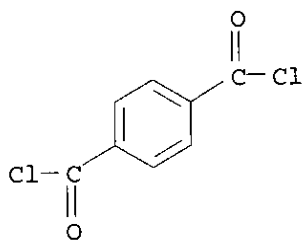
CMF C8 H8



CM 5

CRN 100-20-9

CMF C8 H4 Cl2 O2



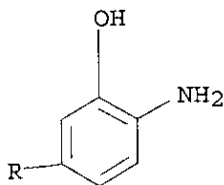
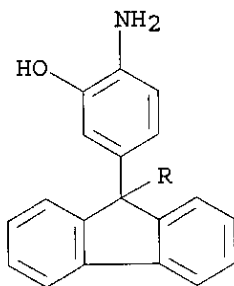
RN 640750-72-7 CAPLUS

CN Benzoyl chloride, 4,4'-(1,2-ethynediyl)bis-, polymer with 3,3'-(9H-fluoren-9-ylidene)bis[6-aminophenol] and methyloxirane polymer with oxirane bis(2-aminopropyl) ether, block (9CI) (CA INDEX NAME)

CM 1

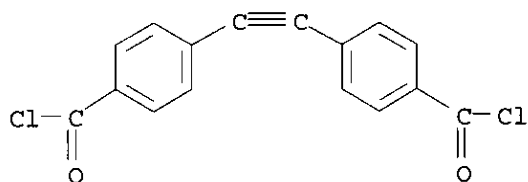
CRN 152480-72-3

CMF C25 H20 N2 O2



CM 2

CRN 16819-44-6
CMF C16 H8 Cl2 O2

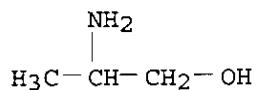


CM 3

CRN 65605-36-9
CMF C3 H9 N O . 1/2 (C3 H6 O . C2 H4 O) x

CM 4

CRN 6168-72-5
CMF C3 H9 N O

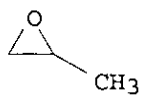


CM 5

CRN 9003-11-6
CMF (C3 H6 O . C2 H4 O) x
CCI PMS

CM 6

CRN 75-56-9
CMF C3 H6 O



CM 7

CRN 75-21-8

CMF C2 H4 O



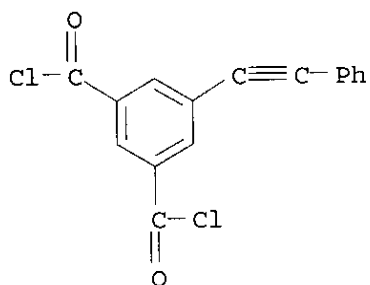
RN 640750-73-8 CAPLUS

CN 1,3-Benzenedicarbonyl dichloride, 5-ethynyl-, polymer with
 α -(2-aminopropyl)- ω -(2-aminopropoxy)poly[oxy(methyl-1,2-ethanediyl)], 3,3'-(9H-fluoren-9-ylidene)bis[6-aminophenol], methyloxirane polymer with oxirane bis(2-aminopropyl) ether, and 5-(phenylethynyl)-1,3-benzenedicarbonyl dichloride, block (9CI) (CA INDEX NAME)

CM 1

CRN 393543-14-1

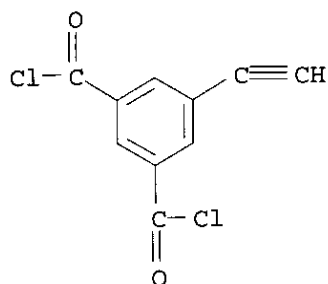
CMF C16 H8 Cl2 O2



CM 2

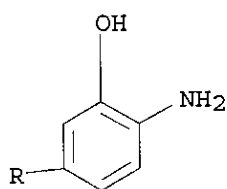
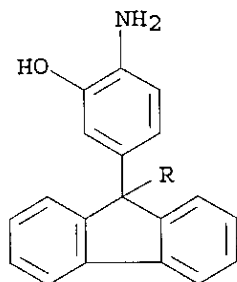
CRN 393543-05-0

CMF C10 H4 Cl2 O2



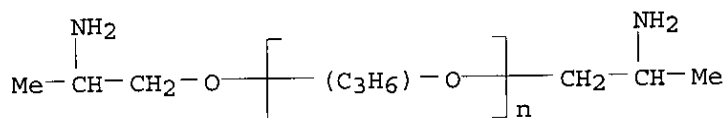
CM 3

CRN 152480-72-3
CMF C25 H20 N2 O2



CM 4

CRN 26403-64-5
CMF (C3 H6 O)_n C6 H16 N2 O
CCI IDS, PMS

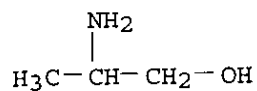


CM 5

CRN 65605-36-9
CMF C3 H9 N O . 1/2 (C3 H6 O . C2 H4 O) x

CM 6

CRN 6168-72-5
CMF C3 H9 N O



CM 7

CRN 9003-11-6

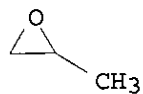
CMF (C3 H6 O . C2 H4 O) x

CCI PMS

CM 8

CRN 75-56-9

CMF C3 H6 O



CM 9

CRN 75-21-8

CMF C2 H4 O



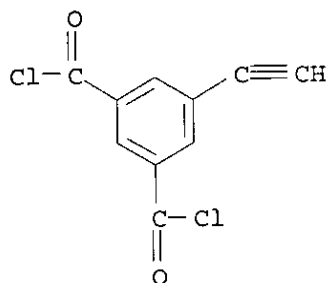
RN 641611-57-6 CAPLUS

CN 1,3-Benzenedicarbonyl dichloride, 5-ethynyl-, polymer with
 α -(4-aminobenzoyl)- ω -[(4-aminobenzoyl)oxy]poly[oxy(methyl-1,2-ethanediyl)] and 3,3'-(9H-fluoren-9-ylidene)bis[6-aminophenol], block
 (9CI) (CA INDEX NAME)

CM 1

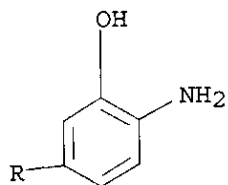
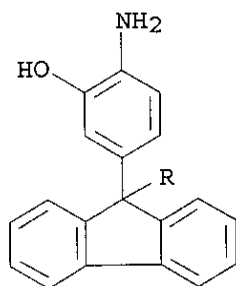
CRN 393543-05-0

CMF C10 H4 Cl2 O2



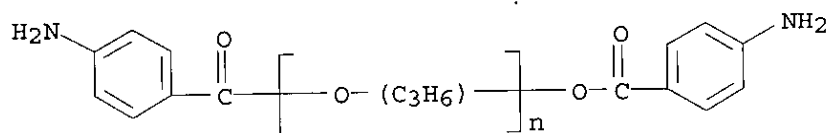
CM 2

CRN 152480-72-3
CMF C25 H20 N2 O2



CM 3

CRN 77450-83-0
CMF (C3 H6 O)_n C14 H12 N2 O3
CCI IDS, PMS



- IC ICM H01B003-30
ICS C08G069-44; C08G073-22; H01L021-312; H01L021-768; H01L021-90
- CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 76
- ST polyamide heat decomposable group porous **polybenzoxazole dielec** film; aminohydroxyphenylfluorene ethynyl naphthalenedicarboxylic chloride aminobenzoate terminated polystyrene copolymer **dielec** film; porous **dielec** film polystyrene polyamine cardo block; **heat resistant** porous **polybenzoxazole dielec** film forming block polyamide
- IT Polycarbonates, uses
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(cardo, polyacetylene-**polybenzoxazole**-; polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)
- IT Polyoxyalkylenes, uses
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(cardo, **polybenzoxazole**-; polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)
- IT Polyamides, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(cardo, polystyrene-, block; polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)
- IT Polybenzoxazoles
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(cardo, polystyrene-, polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)
- IT Porous materials
(films, **dielec.**; polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)
- IT Polyamides, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyacetylene-, polyoxyalkylene-, cardo, block; polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)
- IT Polyoxyalkylenes, uses
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyacetylene-**polybenzoxazole**-, cardo; polyamide compns. for **heat-resistant** insulator films with uniform fine

cells and low **dielec.** constant useful for semiconductor devices)

IT **Polybenzoxazoles**

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyacetylene-polyoxyalkylene-, cardo; polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)

IT **Heat-resistant materials**

Semiconductor devices

(polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)

IT Polyoxyalkylenes, uses

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyamide-, block, cardo; polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)

IT Polycarbonates, uses

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyamide-, polyacetylene-, block, cardo; polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)

IT Polyacetylenes, uses

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyamide-, polyoxyalkylene-, cardo, block; polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)

IT Polyoxyalkylenes, uses

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyamide-polycarbonate-, block, cardo; polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)

IT Polyesters, uses

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyamide-polycarbonate-, block; polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)

IT Polycarbonates, uses

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyamide-polyester-, block; polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low

- dielec.** constant useful for semiconductor devices)
- IT Polyoxyalkylenes, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyamide-polyether-, block; polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)
- IT Polycarbonates, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyamide-polyoxyalkylene-, block, cardo; polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)
- IT Polyethers, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyamide-polyoxyalkylene-, block; polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)
- IT Cardo polymers
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**polyamides**, polystyrene-, block; polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)
- IT Polyesters, uses
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**polybenzoxazole**-, polycarbonate-; polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)
- IT Polyethers, uses
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**polybenzoxazole**-, polyoxyalkylene-; polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)
- IT Polyacetylenes, uses
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**polybenzoxazole**-polyoxyalkylene-, cardo; polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)
- IT Cardo polymers
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**polybenzoxazoles**, polystyrene-; polyamide compns. for

heat-resistant insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)

IT **Polyamides, uses**

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polycarbonate-, polyacetylene-, block, cardo; polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)

IT **Polyoxyalkylenes, uses**

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polycarbonate-, **polybenzoxazole**-, cardo; polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)

IT **Polyamides, uses**

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polycarbonate-polyester-, block; polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)

IT **Polyamides, uses**

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polycarbonate-polyoxyalkylene-, block, cardo; polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)

IT **Cardo polymers**

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polycarbonates, polyacetylene-**polybenzoxazole**-, polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)

IT **Polybenzoxazoles**

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyester-, polycarbonate-, polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)

IT **Polybenzoxazoles**

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyether-, polyoxyalkylene-, polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)

IT **Polyamides, uses**

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

- (polyether-polyoxyalkylene-, block; polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)
- IT **Polyamides**, uses
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (polyoxyalkylene-, block, cardo; polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)
- IT **Polycarbonates**, uses
 RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (polyoxyalkylene-, **polybenzoxazole**-, cardo; polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)
- IT **Cardo polymers**
 RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (polyoxyalkylenes, **polybenzoxazole**-, polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)
- IT **Films**
 (porous, **dielec.**; polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)
- IT **Dielectric films**
 (porous; polyamide compns. for **heat-resistant** insulator films with uniform fine cells and low **dielec.** constant useful for semiconductor devices)
- IT 75-21-8DP, Oxirane, reaction **products** with polystyrene and 4-nitrobenzoic acid, hydrogenated, polymers with dicarboxylic dichloride and aminohydroxyphenylfluorene 110-54-3DP, Hexane, 1,6-derivs., polycarbonates, block polymers with aminohydroxyphenylfluorene, (amino-terminated polyoxyalkylenes,) and acetylenic group-containing dicarboxylic acid dichlorides 122-04-3DP, esters with hydroxy-terminated polystyrene, hydrogenated, polymers with dicarboxylic dichloride and aminohydroxyphenylfluorene 4194-40-5DP, 3,3'-Diamino-4,4'-dihydroxybiphenyl, block polymers with polyester-polycarbonate diol, 5-ethynylisophthalic dichloride, and 5-phenylethynylterephthalic dichloride 9046-10-0DP, Polypropylene glycol bis(2-aminopropyl) ether, block polymers with aminohydroxyphenylfluorene, polycarbonate diols, (amino-terminated polyoxyalkylenes,) and acetylenic group-containing dicarboxylic acid dichlorides 16819-44-6DP, block polymers with polycarbonate diol and 9,9-bis(4-amino-3-hydroxyphenyl)fluorene 152480-72-3DP, 9,9-Bis(4-amino-3-hydroxyphenyl)fluorene, block polymers with polycarbonate diols, (amino-terminated polyoxyalkylenes,) and acetylenic group-containing dicarboxylic acid dichlorides 393543-05-0DP, block polymers with diaminodihydroxy-containing fluorenyl (biphenyl), (amino-terminated polyoxypropylene,) polycarbonate diol, and ethynyl-containing dicarboxylic acid dichlorides 393543-14-1DP, block

polymers with 9,9-bis(4-amino-3-hydroxyphenyl)fluorene, amino-terminated polyoxypolyene, polycarbonate diol, and 5-ethynylisophthalic dichloride 562870-37-5DP, block polymers with 3,3'-diamino-4,4'-dihydroxybiphenyl, polyester-polycarbonate diol, and 5-ethynylisophthalic dichloride 640750-13-6P 640750-14-7P 640750-15-8P 640750-16-9P 640750-72-7P, 9,9-Bis(4-amino-3-hydroxyphenyl)fluorene-ED 2003-4,4'-tolane dicarboxylic acid dichloride block copolymer 640750-73-8P, 9,9-Bis(4-amino-3-hydroxyphenyl)fluorene-ED 2003-5-ethynylisophthalic acid dichloride-5-phenylethynyl isophthalic acid dichloride-polypropylene glycol bis(2-aminopropyl) ether block copolymer 641611-57-6P

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyamide compns. for heat-resistant insulator films with uniform fine cells and low dielec. constant useful for semiconductor devices)

L30 ANSWER 5 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2004:19987 CAPLUS

DOCUMENT NUMBER: 140:60850

TITLE: Insulation film materials, varnishes containing them, polyoxazole-based microporous films with low moisture absorption **manufactured** from them, and semiconductor devices using them

INVENTOR(S): Ishikawa, Tadahiro; Enoki, Naoshi; Saito, Hidenori

PATENT ASSIGNEE(S): Sumitomo Bakelite Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 34 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004002722	A2	20040108	JP 2003-74571	20030318
PRIORITY APPLN. INFO.:			JP 2002-87068	A 20020326

AB The materials, useful for interlayer dielects. and protection films, contain reaction **products** of **polyamides**
 $[HNX(OR_1)(OR_2)NHC:OY_1C:O]_k[HNX(OR_3)(OR_4)NHC:OY_2C:O]_m[HNX(OR_5)(OR_6)NHC:OY_3C:O]_n$ ($R_1-6 = H$, monovalent organic group; $X =$ tetravalent aromatic group; Y_1-3 divalent aromatic group; $k, m > 0$; $n \geq 0$; $k + m + n = 2-1000$; $(k + m)/(k + m + n) 0.05-1$) and reactive oligomers. Thus, a methylpyrrolidone solution containing a copolymer **prepared** from 3,3'-diamino-4,4'-dihydroxybiphenyl 19.46, 5-ethynylisophthalic dichloride 11.35, 5-phenylethynylisophthalic dichloride 15.16, and 4-aminobenzoate ester-terminated styrene oligomer 28.80 g was applied on an Al-deposited Si wafer and heated at 300° for 60 min and at 400° for 60 min to give a test piece showing relative **dielec.** constant 2.20, heat-decomposition temperature 540°, glass-transition temperature >450°, and water absorption 0.3%.

IT 638189-51-2P

RL: **IMF (Industrial manufacture)**; RCT (Reactant); TEM (Technical or engineered material use); **PREP (Preparation)**; RACT (Reactant or reagent); USES (Uses)
(polyamide-based varnishes for microporous **polybenzoxazole** insulation films with low moisture absorption for semiconductor devices)

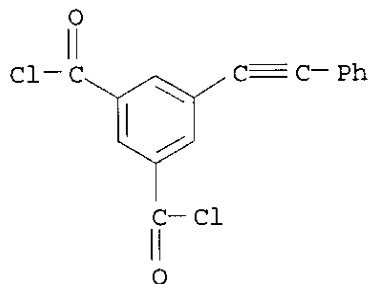
RN 638189-51-2 CAPLUS

CN 1,3-Benzenedicarbonyl dichloride, 5-ethynyl-, polymer with α -(2-aminopropyl)- ω -(2-aminopropoxy)poly[oxy(methyl-1,2-ethanediyl)], 4,4'-(9H-fluoren-9-ylidene)bis[2-aminophenol] and 5-(phenylethynyl)-1,3-benzenedicarbonyl dichloride (9CI) (CA INDEX NAME)

CM 1

CRN 393543-14-1

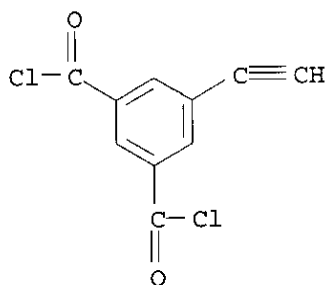
CMF C16 H8 Cl2 O2



CM 2

CRN 393543-05-0

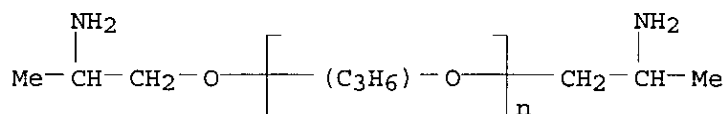
CMF C10 H4 Cl2 O2



CM 3

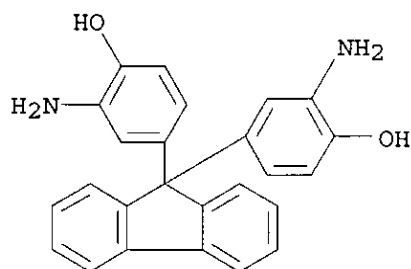
CRN 26403-64-5

CMF (C3 H6 O)_n C6 H16 N2 O
CCI IDS, PMS



CM 4

CRN 20638-07-7
CMF C25 H20 N2 O2



- IC ICM C08G069-48
ICS C09D005-25; C09D179-04; H01L021-312
- CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 76
- ST **elec** insulator film **polybenzoxazole** semiconductor
protection; polyamide polystyrene copolymer varnish microporous film;
semiconductor interlayer **dielec** low moisture absorption
- IT **Heat-resistant** materials
(films; polyamide-based varnishes for microporous
polybenzoxazole insulation films with low moisture absorption
for semiconductor devices)
- IT Films
(**heat-resistant**; polyamide-based varnishes for
microporous **polybenzoxazole** insulation films with low
moisture absorption for semiconductor devices)
- IT Polyesters, uses
Polyoxyalkylenes, uses
RL: IMF (Industrial manufacture); RCT (Reactant); TEM (Technical or
engineered material use); PREP (Preparation); RACT (Reactant or reagent);
USES (Uses)
(polyamide-; polyamide-based varnishes for microporous
polybenzoxazole insulation films with low moisture absorption
for semiconductor devices)
- IT **Dielectric** films

Plastic films

Semiconductor devices

(polyamide-based varnishes for microporous **polybenzoxazole** insulation films with low moisture absorption for semiconductor devices)

IT **Polyamides, uses**

RL: IMF (Industrial manufacture); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(polyamide-based varnishes for microporous **polybenzoxazole** insulation films with low moisture absorption for semiconductor devices)

IT **Polybenzoxazoles**

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyamide-based varnishes for microporous **polybenzoxazole** insulation films with low moisture absorption for semiconductor devices)

IT **Polyesters, uses**

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(**polybenzoxazole**-; polyamide-based varnishes for microporous **polybenzoxazole** insulation films with low moisture absorption for semiconductor devices)

IT **Polyamides, uses**

RL: IMF (Industrial manufacture); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(polyester-; polyamide-based varnishes for microporous **polybenzoxazole** insulation films with low moisture absorption for semiconductor devices)

IT **Polybenzoxazoles**

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyester-; polyamide-based varnishes for microporous **polybenzoxazole** insulation films with low moisture absorption for semiconductor devices)

IT **Polyamides, uses**

RL: IMF (Industrial manufacture); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(polyoxyalkylene-; polyamide-based varnishes for microporous **polybenzoxazole** insulation films with low moisture absorption for semiconductor devices)

IT **Polybenzoxazoles**

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyoxyalkylene-; polyamide-based varnishes for microporous **polybenzoxazole** insulation films with low moisture absorption for semiconductor devices)

IT 23351-91-9P, 5-Bromoisophthalic acid 51760-21-5P, Dimethyl
5-bromoisophthalate 168619-21-4P 217655-36-2P, 1-[3,5-

Bis(methoxycarbonyl)phenyl]-2-phenylethyne 393543-03-8P,
4-[3,5-Bis(methoxycarbonyl)phenyl]-2-methyl-3-butyn-1-ol 393543-04-9P,
5-Ethynylisophthalic acid dipotassium salt 393543-05-0P,
5-Ethynylisophthaloyl dichloride 393543-14-1P, 5-(2-
Phenylethynyl)isophthaloyl dichloride
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)

(for polyamide **preparation**; polyamide-based varnishes for
microporous **polybenzoxazole** insulation films with low
moisture absorption for semiconductor devices)

IT 99-31-0, 5-Aminoisophthalic acid 115-19-5, 3-Methyl-1-butyn-3-ol
358-23-6, Trifluoromethanesulfonic anhydride 7719-09-7, Thionyl chloride
13036-02-7, Dimethyl 5-hydroxyisophthalate
RL: RCT (Reactant); RACT (Reactant or reagent)

(for polyamide **preparation**; polyamide-based varnishes for
microporous **polybenzoxazole** insulation films with low
moisture absorption for semiconductor devices)

IT 122-04-3DP, 4-Nitrobenzoic acid chloride, reaction **products** with
polystyrene, polymethyl methacrylate, or polycaprolactone diol and
polyamides 9003-53-6DP, Polystyrene, aminobenzoate-terminated,
reaction **products** with **polyamides** 9011-14-7DP,
Poly(methyl methacrylate), aminobenzoate-terminated, reaction
products with **polyamides** 25014-31-7DP,
 α -Methylstyrene polymer, amino-terminated, reaction **products**
with **polyamides** 25248-42-4DP, Polycaprolactone, SRU, diol
derivs., aminobenzoate-terminated, reaction **products** with
polyamides 110736-71-5DP, Placel 240, aminobenzoate-terminated,
reaction **products** with **polyamides** 582294-69-7DP,
reaction **products** with aminobenzoate-terminated oligomers
638189-50-1DP, reaction **products** with aminobenzoate-terminated
polycaprolactone 638189-51-2P 638189-52-3P

RL: IMF (Industrial manufacture); RCT (Reactant); TEM (Technical
or engineered material use); PREP (Preparation); RACT (Reactant
or reagent); USES (Uses)

(polyamide-based varnishes for microporous **polybenzoxazole**
insulation films with low moisture absorption for semiconductor
devices)

L30 ANSWER 6 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2004:17958 CAPLUS

DOCUMENT NUMBER: 140:60818

TITLE: **Manufacture** of organic insulating films with
good heat stability and low water absorption and of
their materials

INVENTOR(S): Izumi, Atsushi; Murayama, Kazumoto

PATENT ASSIGNEE(S): Sumitomo Bakelite Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 33 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004002735	A2	20040108	JP 2003-78918	20030320
PRIORITY APPLN. INFO.:			JP 2002-96319	A 20020329

AB The title films, satisfying thickness 0.05-100 μm and average surface roughness (Ra) $\leq 5\%$ of the thickness, are **manufactured by** application of organic solvent-based **dielec.** dispersions or solns. on substrates followed by heat treatment. In the **preparation** of the dielects., two kinds of bivalent bisaminophenols (Markush given) are reacted with ethynyl-containing dicarboxylic acids having bivalent functional groups (Markush given) to form **polyamides** which are then reacted with oligomers having substituents reactive to carboxyl, amino, or hydroxy of the **polyamides** to give copolymers. The films are useful for cover-coat layers, solder resists, liquid crystal alignment layers, etc. Thus, 3,3'-diamino-4,4'-dihydroxydiphenyl ether 45, 4,4'-diamino-3,3'-dihydroxydiphenyl ether 45, 5-phenylethynylisophthaloyl dichloride 50, and 5-ethynylisophthaloyl dichloride 50 mmol were polymerized at 25° in NMP and then reacted with 9 mmol polypropylene glycol bis(2-aminopropyl) ether in the presence of Et₃N to give a copolymer of Mw 45,000, which was dissolved in cyclohexanone, applied on a Si wafer, and heat treated at 90° and then baked at 400° to give a **polybenzoxazole** resin layer showing Ra 0.3% of the thickness, Tg >450°, and water absorption 0.2%.

IT 638163-47-0P 638163-49-2P
 RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
 (manufacture of organic dielec. films with good heat stability and low water absorption for electronic devices)

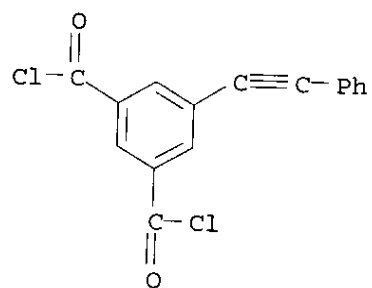
RN 638163-47-0 CAPLUS

CN 1,3-Benzenedicarbonyl dichloride, 5-(phenylethynyl)-, polymer with α -(2-aminomethylethyl)- ω -(2-aminomethylethoxy)poly[oxy(methyl-1,2-ethanediyl)], 2-ethynyl-1,4-benzenedicarbonyl dichloride, 3,3'-(9H-fluoren-9-ylidene)bis[6-aminophenol] and 3,3'-oxybis[6-aminophenol], block (9CI) (CA INDEX NAME)

CM 1

CRN 393543-14-1

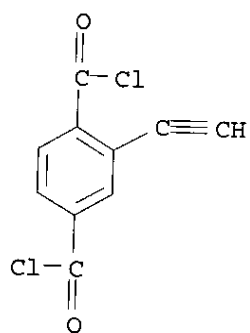
CMF C16 H8 Cl2 O2



CM 2

CRN 393543-09-4

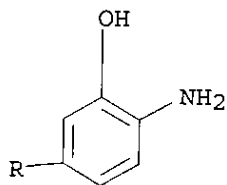
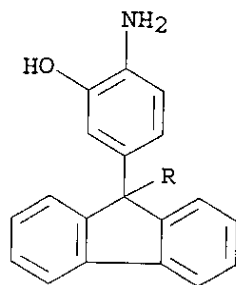
CMF C10 H4 Cl2 O2



CM 3

CRN 152480-72-3

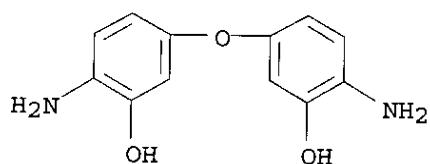
CMF C25 H20 N2 O2



CM 4

CRN 20817-05-4

CMF C12 H12 N2 O3

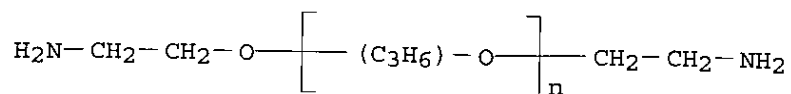


CM 5

CRN 9046-10-0

CMF (C3 H6 O)_n C6 H16 N2 O

CCI IDS, PMS



2 (D1-Me)

RN 638163-49-2 CAPLUS

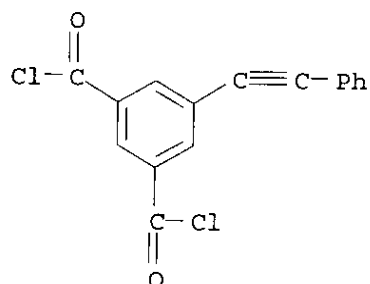
CN 1,3-Benzenedicarbonyl dichloride, 5-(phenylethynyl)-, polymer with

2-ethynyl-1,4-benzenedicarbonyl dichloride, 3,3'-(9H-fluoren-9-ylidene)bis[6-aminophenol] and 3,3'-oxybis[6-aminophenol] (9CI) (CA INDEX NAME)

CM 1

CRN 393543-14-1

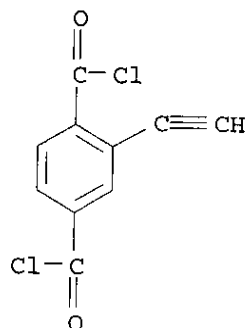
CMF C16 H8 Cl2.O2



CM 2

CRN 393543-09-4

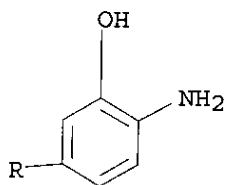
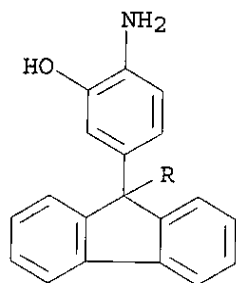
CMF C10 H4 Cl2 O2



CM 3

CRN 152480-72-3

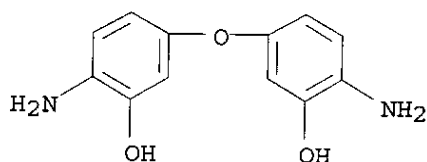
CMF C25 H20 N2 O2



CM 4

CRN 20817-05-4

CMF C12 H12 N2 O3



- IC ICM C08G081-00
ICS B05D003-02; B32B005-18; B32B007-02; B32B027-34; H01L021-312;
H05K003-28; H05K003-46
- CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 76
- ST diaminodihydroxydiphenyl ether ethynylisophthaloyl chloride
polybenzoxazole dielec film; **heat**
resistant dielec polybenzoxazole film water
absorption; polyoxypropylene aminopropyl ether **polybenzoxazole**
block **dielec** film; porous **dielec** film pyrolyzable
oligomer polymd
- IT **Heat-resistant** materials
(**dielec.**, porous, films; **manufacture** of organic
dielec. films with good heat stability and low water absorption
for electronic devices)
- IT Porous materials
(films, **dielec.**, **heat resistant**;
manufacture of organic **dielec.** films with good heat stability

- and low water absorption for electronic devices)
- IT **Electric insulators**
(**heat-resistant**, porous, films; **manufacture** of organic **dielec.** films with good heat stability and low water absorption for electronic devices)
- IT **Polybenzoxazoles**
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(**manufacture** of organic **dielec.** films with good heat stability and low water absorption for electronic devices)
- IT Polyethers, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**polybenzoxazole-**; **manufacture** of organic **dielec.** films with good heat stability and low water absorption for electronic devices)
- IT Polyethers, uses
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(polyester-, block, diol derivs., reaction **products** with ethynyl-containing **polybenzoxazoles**; **manufacture** of organic **dielec.** films with good heat stability and low water absorption for electronic devices)
- IT Polyesters, uses
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(polyether-, block, diol derivs., reaction **products** with ethynyl-containing **polybenzoxazoles**; **manufacture** of organic **dielec.** films with good heat stability and low water absorption for electronic devices)
- IT **Polybenzoxazoles**
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-; **manufacture** of organic **dielec.** films with good heat stability and low water absorption for electronic devices)
- IT Films
(porous, **dielec.**, **heat resistant**; **manufacture** of organic **dielec.** films with good heat stability and low water absorption for electronic devices)
- IT **Dielectric films**
(porous, **heat-resistant**; **manufacture** of organic **dielec.** films with good heat stability and low water absorption for electronic devices)
- IT 150-13-ODP, 4-Aminobenzoic acid, reaction **products** with oligomeric polystyrene and **polybenzoxazoles** 638163-45-8P 638163-46-9P 638163-47-0P 638163-48-1P 638163-49-2P 638163-50-5DP, reaction **products** with aminobenzoate-terminated styrene oligomers
RL: IMF (Industrial manufacture); PEP (Physical, engineering or

chemical process); PYP (Physical process); TEM (Technical or engineered material use); **PREP (Preparation)**; PROC (Process); USES (Uses)

(**manufacture** of organic **dielec.** films with good heat stability and low water absorption for electronic devices)

IT 75-21-8, Ethylene oxide, reactions 122-04-3, 4-Nitrobenzoic acid chloride 110736-71-5, Placel 240

RL: RCT (Reactant); RACT (Reactant or reagent)

(**manufacture** of organic **dielec.** films with good heat stability and low water absorption for electronic devices)

IT 9003-53-6DP, Polystyrene, reaction **products** with 4-aminobenzoic acid and **polybenzoxazoles** 9011-14-7DP, Poly(methyl methacrylate), reaction **products** with 4-aminobenzoic acid and **polybenzoxazoles** 25014-31-7DP, α -Methylstyrene homopolymer, p-aminobenzoate-terminated, reaction **products** with **polybenzoxazoles** 25248-42-4DP, Polycaprolactone, diol derivs., p-aminobenzoate ester, reaction **products** with ethynyl-containing **polybenzoxazoles**

RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); **PREP (Preparation)**; PROC (Process); USES (Uses)

(oligomeric; **manufacture** of organic **dielec.** films with good heat stability and low water absorption for electronic devices)

L30 ANSWER 7 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2004:5183 CAPLUS

DOCUMENT NUMBER: 140:77584

TITLE: **Manufacture of poly(o-hydroxyamides) and polybenzoxazoles as dielectrics**

INVENTOR(S): Sezi, Recai; Walter, Andreas; Maltenberger, Anna; Lowack, Klaus

PATENT ASSIGNEE(S): Infineon Technologies Ag, Germany

SOURCE: Eur. Pat. Appl., 37 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1375559	A1	20040102	EP 2003-13753	20030617
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
DE 10228770	A1	20040212	DE 2002-10228770	20020627
JP 2004068005	A2	20040304	JP 2003-183611	20030626
CN 1468839	A	20040121	CN 2003-145283	20030627
US 2004063895	A1	20040401	US 2003-609460	20030627
PRIORITY APPLN. INFO.:			DE 2002-10228770 A	20020627

AB Poly(o-hydroxyamides) were **manufactured** from o-hydroxydiamines and dicarboxylic acid chlorides and converted by heat-induced cyclization into **polybenzoxazoles** (structures

specified), which are useful as **dielec.** coatings for microelectronic devices with improved adhesion to substrates. For example, adding dropwise N-methylpyrrolidone (NMP) solution of 0.095 mol 9,9'-[4-(4-chlorocarbonyl)phenoxy]phenylfluorene to stirred NMP solution of 0.1 mol 9,9'-bis[4-((3-hydroxy-4-amino)phenoxy)phenyl]fluorene at 10°, stirring the mixture for 1 h at 10°, 1 h at 20°, cooling to 10° adding a solution of 0.01 mol 5-norbornene-2,3-dicarboxylic anhydride (end-capping agent) in γ -butyrolactone (γ -BL), stirring 1 h at 10°, 1 h at 20°, adding pyridine, diluting with γ -BL and precipitating in H₂O/Me₂CHOH gave a poly(o-**hydroxyamide**). A solution of this polymer in NMP or γ -BL was spin-coated on Ti nitride-sputtered Si wafer, the resulting film was soft-baked for 1 min at 120°, 10 Ti nitride-sputtered chips were pressed on the film and the whole was heated for 1 h at 425° to convert poly(o-**hydroxyamide**) film to **polybenzoxazole** coating. The average separation force of the chips from the coating was 18.07 N/mm².

IT 640294-92-4DP, end-capped with norbornenedicarboxylic anhydride
640294-94-6DP, end-capped with aniline

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(**manufacture** and cyclization; **manufacture** of poly(o-**hydroxyamides**) and **polybenzoxazoles** as heat-resistant dielecs.)

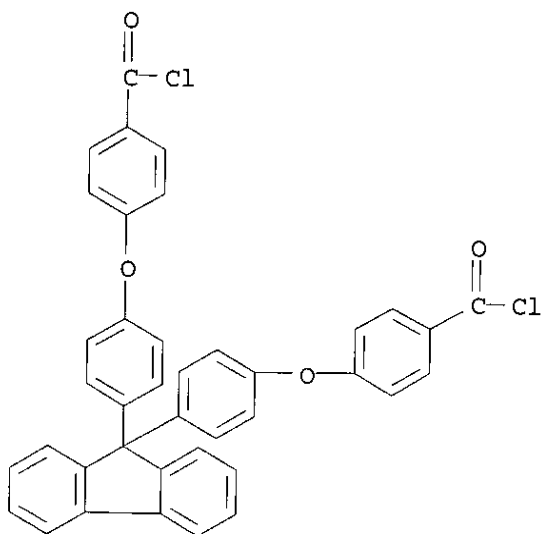
RN 640294-92-4 CAPLUS

CN Benzoyl chloride, 4,4'-[9H-fluoren-9-ylidenebis(4,1-phenyleneoxy)]bis-, polymer with 3,3'-[9H-fluoren-9-ylidenebis(4,1-phenyleneoxy)]bis[6-aminophenol] (9CI) (CA INDEX NAME)

CM 1

CRN 383435-04-9

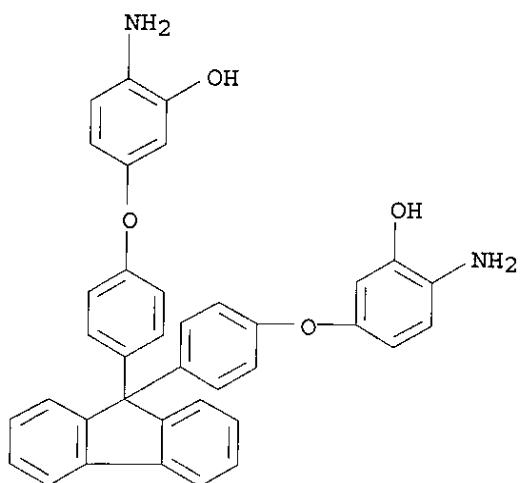
CMF C39 H24 Cl2 O4



CM 2

CRN 359642-31-2

CMF C37 H28 N2 O4



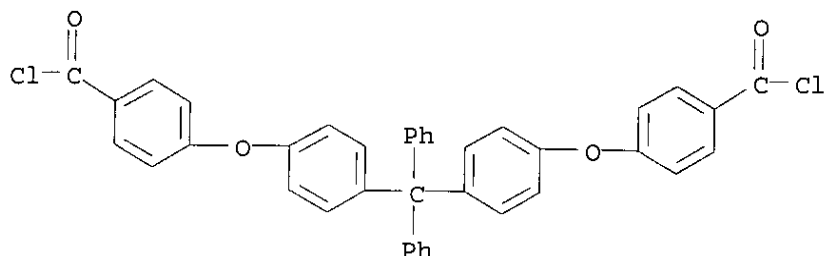
RN 640294-94-6 CAPLUS

CN Benzoyl chloride, 4,4'-[[(diphenylmethane)bis(4,1-phenyleneoxy)]bis-, polymer with 3,3'-[9H-fluoren-9-ylidenebis(4,1-phenyleneoxy)]bis[6-aminophenol] (9CI) (CA INDEX NAME)

CM 1

CRN 640294-93-5

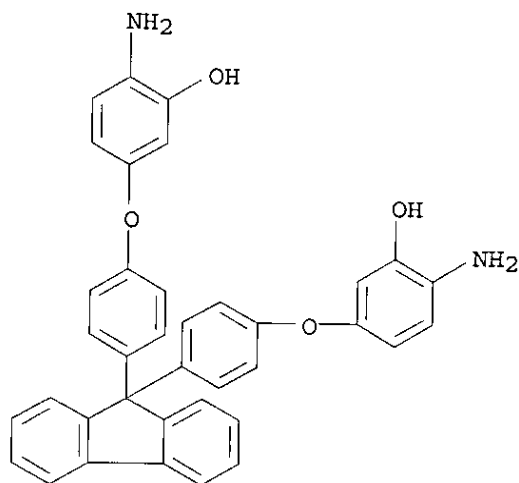
CMF C39 H26 Cl2 O4



CM 2

CRN 359642-31-2

CMF C37 H28 N2 O4



IC ICM C08G069-26

ICS C08G073-22; C08G069-32; H01B003-30

CC 35-5 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 76

ST **polyhydroxyamide manuf cyclization**

polybenzoxazole dielec coating; silicon substrate

adhesion **polybenzoxazole dielec** coating **manuf**

; fluorene phenyl hydroxyaminophenyloxy condensation

polyhydroxyamide manuf cyclization;

chlorocarbonylphenoxyphenylfluorene condensation **polyhydroxyamide**

manuf cyclization

IT **Polyamides, preparation**

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(aromatic, **manufacture** and thermal cyclization; **manufacture** of

poly(o-hydroxyamides) and polybenzoxazoles as
heat-resistant dielects.)

IT **Polybenzoxazoles**

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(coatings; manufacture of poly(o-hydroxyamides) and
polybenzoxazoles as heat-resistant
dielects.)

IT **Heat-resistant materials**

(dielect.; manufacture of poly(o-hydroxyamides)
and polybenzoxazoles as)

IT **Coating materials**

(heat-resistant, dielects.; manufacture of
poly(o-hydroxyamides) and polybenzoxazoles as)

IT **Electric insulators**

(heat-resistant; manufacture of poly(o-
hydroxyamides) and polybenzoxazoles as)

IT **Microelectronic devices**

(manufacture of poly(o-hydroxyamides) and
polybenzoxazoles as heat-resistant dielects.
for)

IT **Electric circuits**

(microcircuits; manufacture of poly(o-hydroxyamides) and
polybenzoxazoles as heat-resistant dielects.
for)

IT 72123-18-3P 383435-25-4P 640294-97-9P 640294-98-0P 640294-99-1P

RL: IMF (Industrial manufacture); PREP (Preparation)
(coating; manufacture of poly(o-hydroxyamides) and
polybenzoxazoles as heat-resistant
dielects.)

IT 62-53-3DP, Aniline, reaction products with poly(o-
hydroxyamide) 826-62-0DP, 5-Norbornene-2,3-dicarboxylic
anhydride, reaction products with poly(o-hydroxyamide)
920-46-7DP, Methacryloyl chloride, reaction products with
poly(o-hydroxyamide) 383435-17-4P 512172-72-4DP, end-capped
with norbornenecarboxylic chloride 640294-92-4DP, end-capped
with norbornenedicarboxylic anhydride 640294-94-6DP, end-capped
with aniline 640294-95-7DP, end-capped with methacryloyl chloride
640294-96-8DP, end-capped with methacryloyl chloride

RL: IMF (Industrial manufacture); RCT (Reactant); PREP
(Preparation); RACT (Reactant or reagent)

(manufacture and cyclization; manufacture of poly(o-
hydroxyamides) and polybenzoxazoles as heat
-resistant dielects.)

IT 27063-48-5DP, reaction products with poly(o-hydroxyamide
)

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)

(manufacture of poly(o-hydroxyamides) and
polybenzoxazoles as heat-resistant
dielects.)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L30 ANSWER 8 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:912293 CAPLUS

DOCUMENT NUMBER: 139:396313

TITLE: **Polybenzoxazole dielectrics** with
self-generated pores and o-hydroxyamide
monomers for manufacture of these porous
dielectrics

INVENTOR(S): Sezi, Recai; Walter, Andreas; Lowack, Klaus;
Maltenberger, Anna; Banfic, Robert

PATENT ASSIGNEE(S): Infineon Technologies AG, Germany

SOURCE: Ger. Offen., 26 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 10218788	A1	20031120	DE 2002-10218788	20020426
US 2004028821	A1	20040212	US 2003-424376	20030428

PRIORITY APPLN. INFO.: DE 2002-10218788 A 20020426

AB The invention concerns poly-o-hydroxyamides with binaphthyl
groups in the repeating units. These poly-o-hydroxyamides are
cyclized by heating to polybenzoxazole dielecs. containing pores of
the size the the dielec. constant is <2.5.

IT **625444-13-5DP**, reaction products with methacrylic acid
RL: IMF (Industrial manufacture); PREP (Preparation)
(binaphthyl group-containing polybenzoxazole dielecs. with
self-generated pores and lower dielec. constant)

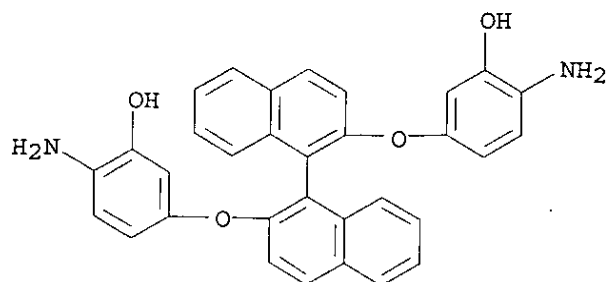
RN 625444-13-5 CAPLUS

CN 2,6-Naphthalenedicarbonyl dichloride, polymer with 3,3'-[[1,1'-
binaphthalene]-2,2'-diylbis(oxy)]bis[6-aminophenol], 4,4'-(9H-fluoren-9-
ylidene)bis[2-aminophenol] and 5-(phenylethynyl)-1,3-benzenedicarbonyl
dichloride (9CI) (CA INDEX NAME)

CM 1

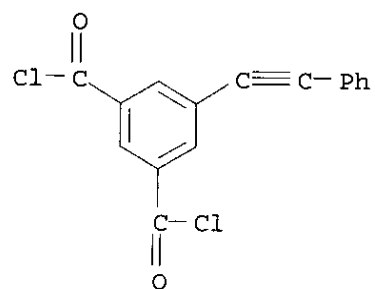
CRN 625444-02-2

CMF C32 H24 N2 O4



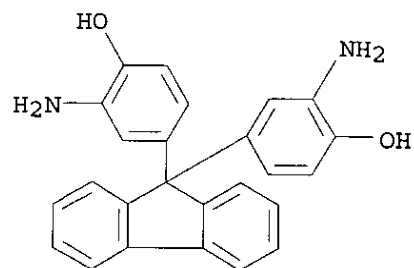
CM 2

CRN 393543-14-1
CMF C16 H8 C12 O2



CM 3

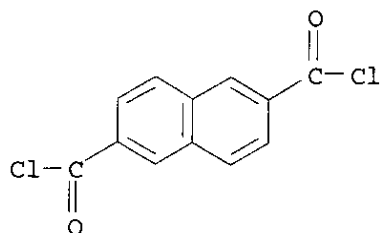
CRN 20638-07-7
CMF C25 H20 N2 O2



CM 4

CRN 2351-36-2

CMF C12 H6 Cl2 O2



IT 625444-06-6DP, reaction products with methacrylic acid, cyclized 625444-10-2DP, reaction products with norbornenedicarboxylic acid anhydride, cyclized 625444-11-3DP, reaction products with norbornenecarbonyl chloride, cyclized
 RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(binaphthyl group-containing polybenzoxazole dielects. with self-generated pores and lower dielec. constant)

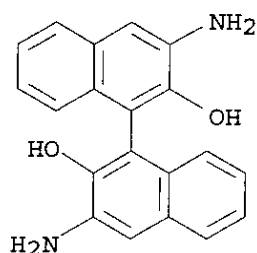
RN 625444-06-6 CAPLUS

CN 1,4-Benzenedicarbonyl dichloride, polymer with 3,3'-diamino[1,1'-binaphthalene]-2,2'-diol (9CI) (CA INDEX NAME)

CM 1

CRN 625444-05-5

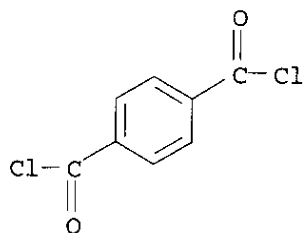
CMF C20 H16 N2 O2



CM 2

CRN 100-20-9

CMF C8 H4 Cl2 O2



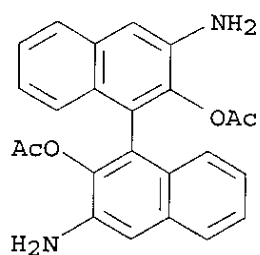
RN 625444-10-2 CAPLUS

CN Benzoyl chloride, 4,4'-oxybis-, polymer with 3,3'-[[1,1'-binaphthalene]-2,2'-diylbis(oxy)]bis[6-aminophenol] and 3,3'-diamino[1,1'-binaphthalene]-2,2'-diyl diacetate (9CI) (CA INDEX NAME)

CM 1

CRN 625444-09-9

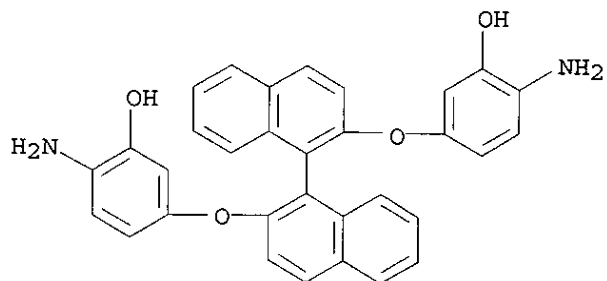
CMF C24 H20 N2 O4



CM 2

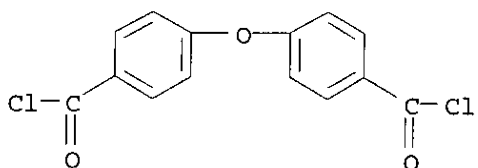
CRN 625444-02-2

CMF C32 H24 N2 O4



CM 3

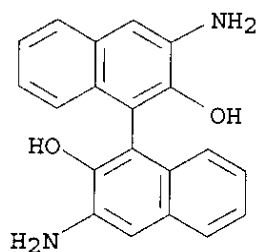
CRN 7158-32-9
CMF C14 H8 Cl2 O3



RN 625444-11-3 CAPLUS
CN 1,3-Benzenedicarbonyl dichloride, 5-(phenylethynyl)-, polymer with
3,3'-diamino[1,1'-binaphthalene]-2,2'-diol, 4,4'-(9H-fluoren-9-
ylidene)bis[2-aminophenol] and 4,4'-oxybis(benzoyl chloride) (9CI) (CA
INDEX NAME)

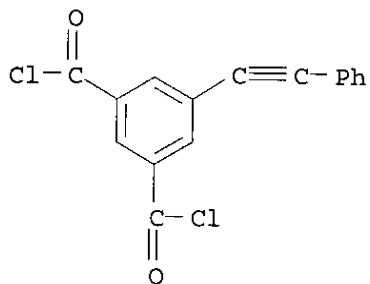
CM 1

CRN 625444-05-5
CMF C20 H16 N2 O2



CM 2

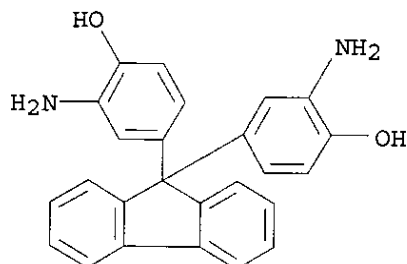
CRN 393543-14-1
CMF C16 H8 Cl2 O2



CM 3

CRN 20638-07-7

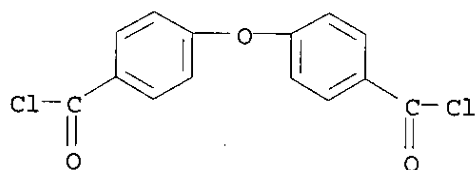
CMF C25 H20 N2 O2



CM 4

CRN 7158-32-9

CMF C14 H8 Cl2 O3



IC ICM C08G073-22

ICS C08G069-44; C09D005-25; B32B015-08; H05K001-03

CC 35-5 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 76

ST **polyhydroxyamide binaphthyl contg manuf precursor**
polybenzoxazole dielec

IT **Dielectric films**

(binaphthyl group-containing **polybenzoxazole** dielecs. with self-generated pores and lower **dielec.** constant)

IT **Polybenzoxazoles**

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(binaphthyl group-containing **polybenzoxazole** dielecs. with self-generated pores and lower **dielec.** constant)

IT **Electric apparatus**

(binaphthyl group-containing **polybenzoxazole** dielecs. with self-generated pores and lower **dielec.** constant for electronic parts)

IT **Polyamides, preparation**

RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical,

engineering or chemical process); PREP (Preparation); PROC (Process)
(ortho-hydroxy, precursors; binaphthyl group-containing
polybenzoxazole dielects. with self-generated pores and lower
dielec. constant)

- IT 625444-13-5DP, reaction **products** with methacrylic acid
RL: IMF (Industrial manufacture); PREP (Preparation)
(binaphthyl group-containing **polybenzoxazole** dielects. with
self-generated pores and lower **dielec.** constant)
- IT 79-41-4DP, Methacrylic acid, reaction **products** with binaphthyl
group-containing poly-o-**hydroxyamides**, cyclized 826-62-0DP,
5-Norbornene-2,3-dicarboxylic acid anhydride, reaction **products**
with binaphthyl group-containing poly-o-**hydroxyamides**, cyclized
27063-48-5DP, 5-Norbornene-2-carbonyl chloride, reaction **products**
with binaphthyl group-containing poly-o-**hydroxyamides**, cyclized
625444-03-3DP, reaction **products** with norbornenedicarboxylic
acid anhydride, cyclized 625444-04-4DP, reaction **products** with
norbornenedicarboxylic acid anhydride, cyclized 625444-06-6DP,
reaction **products** with methacrylic acid, cyclized
625444-07-7DP, reaction **products** with methacrylic acid, cyclized
625444-08-8DP, reaction **products** with norbornenecarbonyl
chloride, cyclized 625444-10-2DP, reaction **products**
with norbornenedicarboxylic acid anhydride, cyclized 625444-11-3DP
, reaction **products** with norbornenecarbonyl chloride, cyclized
RL: IMF (Industrial manufacture); PRP (Properties); TEM
(Technical or engineered material use); PREP (Preparation); USES
(Uses)
(binaphthyl group-containing **polybenzoxazole** dielects. with
self-generated pores and lower **dielec.** constant)
- IT 625444-01-1P, 2,2'-Diacetoxy-3,3'-dinitro-1,1'-binaphthyl
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(monomer precursor; binaphthyl group-containing **polybenzoxazole**
dielects. with self-generated pores and lower **dielec.** constant)
- IT 602-09-5, 2,2'-Dihydroxy-1,1'-binaphthyl
RL: RCT (Reactant); RACT (Reactant or reagent)
(monomer precursor; binaphthyl group-containing **polybenzoxazole**
dielects. with self-generated pores and lower **dielec.** constant)
- IT 625444-00-0P, 2,2'-Diacetoxy-3,3'-diamino-1,1'-binaphthyl dihydrochloride
RL: IMF (Industrial manufacture); PREP (Preparation)
(monomer; binaphthyl group-containing **polybenzoxazole** dielects.
with self-generated pores and lower **dielec.** constant)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L30 ANSWER 9 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:809399 CAPLUS

DOCUMENT NUMBER: 139:308585

TITLE: Materials and coating varnishes for
polybenzoxazole-based electrically
insulating films and semiconductor devices

INVENTOR(S): Hase, Yoko

PATENT ASSIGNEE(S): Sumitomo Bakelite Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 22 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003292615	A2	20031015	JP 2002-105783	20020408
PRIORITY APPLN. INFO.:			JP 2002-105783	20020408

AB Title materials contain polyamide [HNX(OH)2NHC(:O)ZC(:O)]_m[HNY(OH)2NHC(:O)ZC(:O)]_n film-forming components (X, Y, Z = ≥ 1 group selected from specified group in the document; m, n > 0; m + n = 2-1000; $0.4 \leq m/(m+n) < 1$). The films are obtained by heating varnishes containing the materials and organic solvents for condensation and crosslinking. The semiconductor devices have the films as interlayer insulating films and/or surface-protective layers. Thus, a **polybenzoxazole** film prepared from 3,3'-diamino-4,4'-dihydroxybiphenyl, 3,3'-bis[3-cyclohexyl-5-(4-amino-3-hydroxyphenoxy)phenyl]propane, and 5-ethynylisophthalic dichloride showed dielec. constant 2.65 at 1 MHz and glass transition temperature >450°.

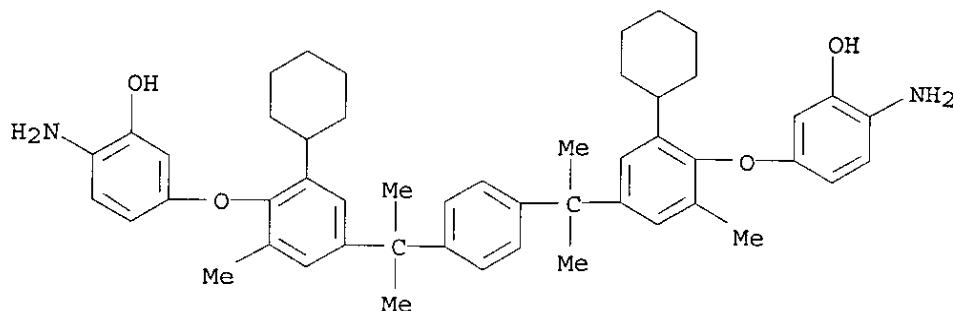
IT 610269-11-9P
 RL: DEV (Device component use); IMF (Industrial manufacture);
 TEM (Technical or engineered material use); PREP (Preparation);
 USES (Uses)
 (polyamide materials for polybenzoxazole-based elec
 . insulating films in semiconductors)

RN 610269-11-9 CAPLUS

CN 2,7-Biphenylenedicarbonyl dichloride, polymer with 3,3'-diamino[1,1'-biphenyl]-4,4'-diol and 3,3'-[1,4-phenylenebis[(1-methylethylidene)(2-cyclohexyl-6-methyl-4,1-phenylene)oxy]]bis[6-aminophenol] (9CI) (CA INDEX NAME)

CM 1

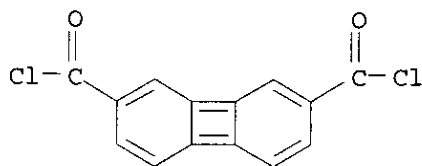
CRN 610269-07-3
 CMF C50 H60 N2 O4



CM 2

CRN 69417-81-8

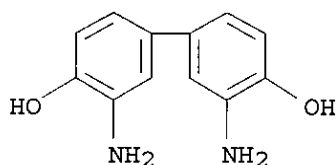
CMF C14 H6 Cl2 O2



CM 3

CRN 4194-40-5

CMF C12 H12 N2 O2



- IC ICM C08G069-26
- ICS H01B003-30; H01L021-312
- CC 38-3 (Plastics Fabrication and Uses)
- Section cross-reference(s): 76
- ST polyamide **polybenzoxazole** insulating film **heat resistance**; **dielec const polybenzoxazole** insulating film semiconductor
- IT **Heat-resistant** materials
(films; polyamide materials for **polybenzoxazole-based elec. insulating films in semiconductors**)
- IT Films
(**heat-resistant**; polyamide materials for **polybenzoxazole-based elec. insulating films in semiconductors**)
- IT **Dielectric** films
Semiconductor devices
(polyamide materials for **polybenzoxazole-based elec. insulating films in semiconductors**)
- IT **Polybenzoxazoles**
RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyamide-; polyamide materials for **polybenzoxazole-based elec. insulating films in semiconductors**)
- IT **Polyamides**, uses

RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**polybenzoxazole**-; polyamide materials for **polybenzoxazole**-based **elec.** insulating films in semiconductors)

IT 23351-91-9P, 5-Bromoisophthalic acid 51760-21-5P, Dimethyl 5-bromoisophthalate 168619-21-4P 217655-36-2P 393543-03-8P, 4-[3,5-Bis(methoxycarbonyl)phenyl]-2-methyl-3-butyn-1-ol 393543-04-9P, Dipotassium 5-ethynylisophthalate

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(intermediates in monomer **preparation**; polyamide materials for **polybenzoxazole**-based **elec.** insulating films in semiconductors)

IT 393543-05-0P 393543-14-1P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(monomers; polyamide materials for **polybenzoxazole**-based **elec.** insulating films in semiconductors)

IT 610269-04-0P 610269-06-2P 610269-08-4P 610269-09-5P 610269-10-8P 610269-11-9P

RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyamide materials for **polybenzoxazole**-based **elec.** insulating films in semiconductors)

IT 99-31-0D, 5-Aminoisophthalic acid, reactants in monomer **preparation**

RL: RCT (Reactant); RACT (Reactant or reagent)
(polyamide materials for **polybenzoxazole**-based **elec.** insulating films in semiconductors)

IT 115-19-5, 3-Methyl-1-butyn-3-ol 358-23-6, Trifluoromethanesulfonic acid anhydride 13036-02-7, Dimethyl 5-hydroxyisophthalate

RL: RCT (Reactant); RACT (Reactant or reagent)
(reactants in monomer **preparation**; polyamide materials for **polybenzoxazole**-based **elec.** insulating films in semiconductors)

L30 ANSWER 10 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:767873 CAPLUS

DOCUMENT NUMBER: 139:277708

TITLE: **Polybenzoxazole**-based **electrically** insulating materials, their varnish, **heat-resistant** porous insulator films, and semiconductor devices having them

INVENTOR(S): Hase, Yoko; Enoki, Naoshi

PATENT ASSIGNEE(S): Sumitomo Bakelite Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 24 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003277508	A2	20031002	JP 2002-87069	20020326
PRIORITY APPLN. INFO.:			JP 2002-87069	20020326

AB The insulating materials are **manufactured** by reacting (A) **polyamides** having branches, which are formed by reacting bisaminophenols and trifunctional carboxylic acids selected from trimellitic acid, trimesic acid, 1,3,5-cyclohexanetricarboxylic acid, and biphenyl ether-3,3',5-tricarboxylic acid, and (B) oligomers having functional groups reactive to carboxy, amino, or OH groups in the **polyamides**. The **polyamides** have repeating units of $[NHX(OH)2NHC(O)Y]_m$ and $[NHX(OH)2NHC(O)ZCO]_n$ [X = tetravalent groups based on benzene, biphenyl, fluorene, etc.; Y = biphenylenylene, acetylene-containing phenylene, biphenylene, naphthylene, cyclohexylene, etc.; Z = phenylene, biphenylene, fluorenylene, cyclohexylene, etc.; $m > 0$; $n \geq 0$; $m + n = 2-1000$; $m/(m + n) = 0.05-1$]. Thus, 3,3'-diamino-4,4'-dihydroxybiphenyl, trimesic acid trichloride, 5-phenylethynylisophthalic acid, and 5-ethynylisophthalic acid were polymerized, reacted with polypropylene glycol bis(2-aminopropyl) ether, dissolved in N-methyl-2-pyrrolidone, applied on an Al-deposited Si wafer, baked, and heated for forming micropores by decomposing polyoxyalkylene portions to give a porous **polybenzoxazole** film showing **dielec.** constant 1.90, $T_g > 450^\circ$, and water absorption 0.2%.

IT **605624-38-2P**
 RL: CPS (Chemical process); **IMF** (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); **PREP** (Preparation); PROC (Process); USES (Uses) (heated for micropore formation; **polybenzoxazole**-based insulating materials for **heat-resistant** porous insulator films)

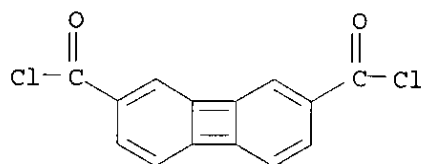
RN **605624-38-2** CAPLUS

CN 1,2,4-Benzenetricarbonyl trichloride, polymer with α -(2-aminomethylethyl)- ω -(2-aminomethylethoxy)poly[oxy(methyl-1,2-ethanediyl)], 2,7-biphenylenedicarbonyl dichloride and 3,3'-diamino[1,1'-biphenyl]-4,4'-diol (9CI) (CA INDEX NAME)

CM 1

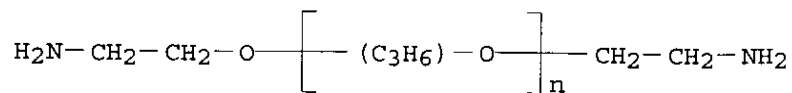
CRN 69417-81-8

CMF C14 H6 Cl2 O2



CM 2

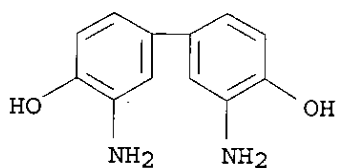
CRN 9046-10-0
 CMF (C3 H6 O)n C6 H16 N2 O
 CCI IDS, PMS



2 (D1-Me)

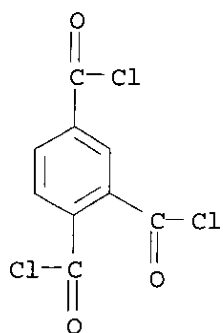
CM 3

CRN 4194-40-5
 CMF C12 H12 N2 O2



CM 4

CRN 3867-55-8
 CMF C9 H3 Cl3 O3



IC ICM C08G081-00
 ICS C08G069-48; C09D179-04; H01B003-30; H01L021-312
 CC 38-3 (Plastics Fabrication and Uses)
 Section cross-reference(s): 76

- ST **polybenzoxazole** polyoxyalkylene varnish porous insulator film;
semiconductor device insulator **polybenzoxazole heat
resistance**
- IT Porous materials
(films, insulator films; **polybenzoxazole**-based insulating
materials for **heat-resistant** porous insulator
films)
- IT Semiconductor devices
(insulator films for; **polybenzoxazole**-based insulating
materials for **heat-resistant** porous insulator
films)
- IT **Polybenzoxazoles**
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical,
engineering or chemical process); TEM (Technical or engineered material
use); PREP (Preparation); PROC (Process); USES (Uses)
(polyamide-, heated for micropore formation; **polybenzoxazole**
-based insulating materials for **heat-resistant**
porous insulator films)
- IT Polyoxyalkylenes, uses
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical,
engineering or chemical process); TEM (Technical or engineered material
use); PREP (Preparation); PROC (Process); USES (Uses)
(polyamide-**polybenzoxazole**-, heated for micropore formation;
polybenzoxazole-based insulating materials for **heat-
resistant** porous insulator films)
- IT **Polybenzoxazoles**
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical,
engineering or chemical process); TEM (Technical or engineered material
use); PREP (Preparation); PROC (Process); USES (Uses)
(polyamide-polyoxyalkylene-, heated for micropore formation;
polybenzoxazole-based insulating materials for **heat-
resistant** porous insulator films)
- IT **Polyamides**, uses
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical,
engineering or chemical process); TEM (Technical or engineered material
use); PREP (Preparation); PROC (Process); USES (Uses)
(**polybenzoxazole**-, heated for micropore formation;
polybenzoxazole-based insulating materials for **heat-
resistant** porous insulator films)
- IT Dielectric films
(**polybenzoxazole**-based insulating materials for **heat
-resistant** porous insulator films)
- IT **Polyamides**, uses
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical,
engineering or chemical process); TEM (Technical or engineered material
use); PREP (Preparation); PROC (Process); USES (Uses)
(**polybenzoxazole**-polyoxyalkylene-, heated for micropore
formation; **polybenzoxazole**-based insulating materials for
heat-resistant porous insulator films)
- IT Films
(porous, insulator films; **polybenzoxazole**-based insulating
materials for **heat-resistant** porous insulator

films)

- IT 100-21-ODP, Terephthalic acid, polymers with diaminophenols, carboxylic acids, and aminostyrene 4194-40-5DP, 3,3'-Diamino-4,4'-dihydroxybiphenyl, polymers with carboxylic acids and aminostyrene 9003-53-6DP, Polystyrene, amino-terminated, polymers with diaminophenols and carboxylic acids 432025-99-5DP, polymers with diaminophenols, carboxylic acids, and aminostyrene 605624-36-0P, 3,3'-Diamino-4,4'-dihydroxybiphenyl-5-ethynylisophthalic acid-5-phenylethynylisophthalic acid-trimesic acid trichloride-polypropylene glycol bis(2-aminopropyl) ether copolymer 605624-37-1P **605624-38-2P** 605624-39-3P 605624-40-6DP, polymers with diaminophenols, carboxylic acids, and aminostyrene
 RL: CPS (Chemical process); **IMF (Industrial manufacture)**; PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); **PREP (Preparation)**; PROC (Process); USES (Uses) (heated for micropore formation; **polybenzoxazole-based insulating materials for heat-resistant porous insulator films**)
- IT 23351-91-9P, 5-Bromoisophthalic acid 51760-21-5P, Dimethyl 5-bromoisophthalate 69417-81-8P, 2,7-Biphenylenedicarbonyl dichloride 168619-21-4P 217655-36-2P, 1-[3,5-Bis(methoxycarbonyl)phenyl]-2-phenylethyne 393543-03-8P 393543-04-9P, Dipotassium 5-Ethynylisophthalate 393543-05-0P, 5-Ethynylisophthaloyl dichloride 393543-14-1P, 5-(2-Phenylethynyl)isophthaloyl dichloride 432025-98-4P, Dipotassium 5-(2-phenylethynyl)isophthalate
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent) (**polybenzoxazole-based insulating materials for heat-resistant porous insulator films**)
- IT 99-31-0, 5-Aminoisophthalic acid 115-19-5, 3-Methyl-1-butyn-3-ol 358-23-6, Trifluoromethanesulfonic acid anhydride 13036-02-7, Dimethyl 5-hydroxyisophthalate
 RL: RCT (Reactant); RACT (Reactant or reagent) (**polybenzoxazole-based insulating materials for heat-resistant porous insulator films**)

L30 ANSWER 11 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:767868 CAPLUS

DOCUMENT NUMBER: 139:293031

TITLE: Polyamide compositions, their varnishes, and **polybenzoxazole dielectric films manufactured from the varnishes for semiconductor devices**

INVENTOR(S): Saito, Hidenori; Enoki, Naoshi

PATENT ASSIGNEE(S): Sumitomo Bakelite Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 22 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003277499	A2	20031002	JP 2002-82006	20020322

PRIORITY APPLN. INFO.: JP 2002-82006 20020322

AB The compns. comprise (A) **polyamides** (NHX₁NHCOY₁CO)_m(NHX₂NHCOY₂CO)_n [m > 0; n ≥ 0; m + n = 2-1000, and m/(m + n) 0.05-1; X₁, X₂ = prescribed aromatic divalent group; Y₁ = prescribed divalent group containing (substituted) ethynyl group, ethynylene group, or biphenylene group; Y₂ = prescribed divalent group] and (B) modified polyalkylene glycols **prepared** by reaction of (1-2):1 (a) prescribed dicarboxylic acids containing (substituted) ethynyl groups, ethynylene groups, or biphenylene groups and (b) polyalkylene glycols and/or their amino derivs. Thus, a varnish containing (a) a polyamide **prepared** from 2,2-bis(3-amino-4-hydroxyphenyl)hexafluoropropane and 5-phenylethynylisophthalic acid dichloride and (b) a modified polyalkylene glycol **prepared** from poly(propylene glycol) bis(2-aminopropyl ether) and 5-ethynylisophthalic acid dichloride was applied on a substrate, heated at 300° for 60 min for crosslinking and forming benzoxazole rings, and heated at 400° for 60 min for decomposing the polyalkylene glycol component to give a porous **polybenzoxazole** film with average pore size ≤ 10 nm, relative **dielec.** constant (1 MHz) 2.0, and good **heat resistance**.

IT 607739-29-7DP, thermally decomposed 607739-30-ODP, thermally decomposed
 RL: DEV (Device component use); IMF (Industrial manufacture);
 TEM (Technical or engineered material use); PREP (Preparation);
 USES (Uses)
 (polyamide compns. for porous **polybenzoxazole dielec**
 . films for semiconductor devices)

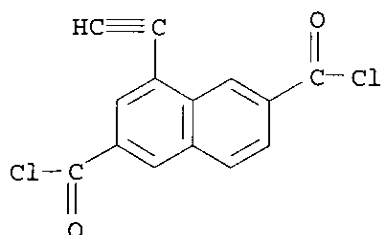
RN 607739-29-7 CAPLUS

CN 2,6-Naphthalenedicarbonyl dichloride, 4-ethynyl-, polymer with 4,4'-(1,2-ethynediyl)bis[benzoyl chloride], 3,3'-[9H-fluoren-9-ylidenebis(4,1-phenyleneoxy)]bis[6-aminophenol] and α-hydro-ω-hydroxypoly(oxy-1,2-ethanediyl) (9CI) (CA INDEX NAME)

CM 1

CRN 405931-94-4

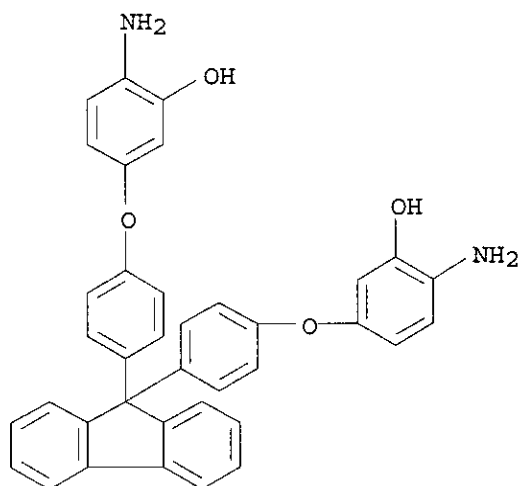
CMF C14 H6 C12 O2



CM 2

CRN 359642-31-2

CMF C37 H28 N2 O4

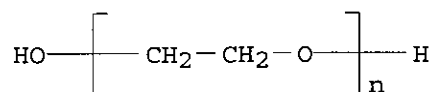


CM 3

CRN 25322-68-3

CMF (C2 H4 O)_n H2 O

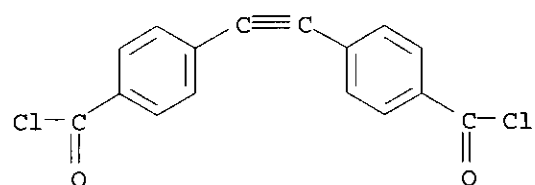
CCI PMS



CM 4

CRN 16819-44-6

CMF C16 H8 Cl2 O2



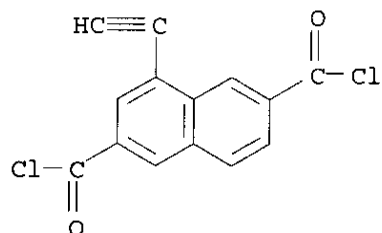
RN 607739-30-0 CAPLUS

CN 2,6-Naphthalenedicarbonyl dichloride, 4-ethynyl-, polymer with
 α -(4-aminobenzoyl)- ω -[(4-aminobenzoyl)oxypoly(oxy-1,4-
butanediyl), 3,3'-diamino[1,1'-biphenyl]-4,4'-diol and
2-ethynyl-1,4-benzenedicarbonyl dichloride (9CI) (CA INDEX NAME)

CM 1

CRN 405931-94-4

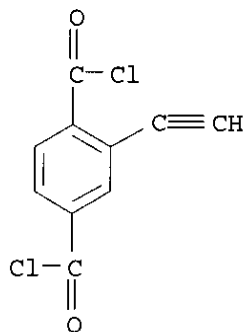
CMF C14 H6 Cl2 O2



CM 2

CRN 393543-09-4

CMF C10 H4 Cl2 O2

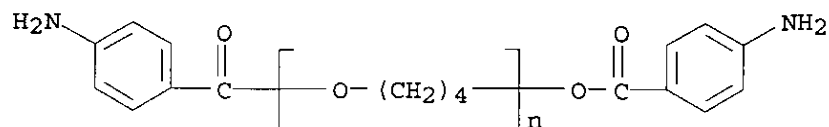


CM 3

CRN 54667-43-5

CMF (C4 H8 O)_n C14 H12 N2 O3

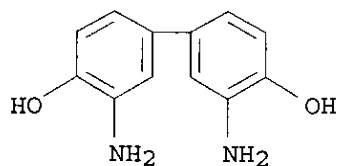
CCI PMS



CM 4

CRN 4194-40-5

CMF C12 H12 N2 O2



IT 450408-24-9P 607739-27-5P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP

(Preparation); RACT (Reactant or reagent)

(polyamide compns. for porous polybenzoxazole dielec
. films for semiconductor devices)

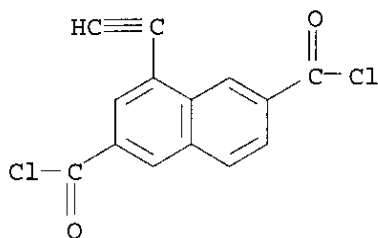
RN 450408-24-9 CAPLUS

CN 2,6-Naphthalenedicarbonyl dichloride, 4-ethynyl-, polymer with
3,3'-[9H-fluoren-9-ylidenebis(4,1-phenyleneoxy)]bis[6-aminophenol] (9CI)
(CA INDEX NAME)

CM 1

CRN 405931-94-4

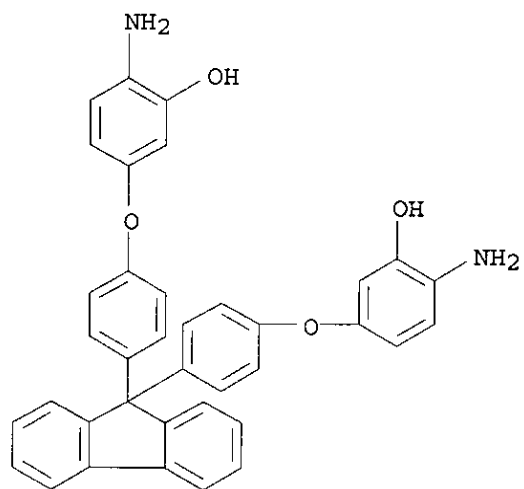
CMF C14 H6 Cl2 O2



CM 2

CRN 359642-31-2

CMF C37 H28 N2 O4



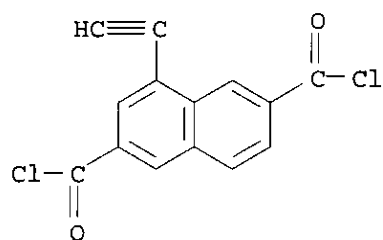
RN 607739-27-5 CAPLUS

CN 2,6-Naphthalenedicarbonyl dichloride, 4-ethynyl-, polymer with
3,3'-diamino[1,1'-biphenyl]-4,4'-diol (9CI) (CA INDEX NAME)

CM 1

CRN 405931-94-4

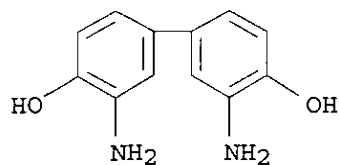
CMF C14 H6 Cl2 O2



CM 2

CRN 4194-40-5

CMF C12 H12 N2 O2



IC ICM C08G069-44
ICS C08G073-22; C08L067-02; C08L077-06; C08L077-10; C09D005-25;
C09D171-00; C09D177-10; H01B003-00; H01B003-30; H01L021-312

CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 76

ST **polybenzoxazole dielec** film semiconductor polyamide
polyoxyalkylene; aminohydroxyphenyl fluoropropane
phenylethynylisophthalate polyoxypropylene aminopropyl ethynylisophthalate
film

IT **Polybenzoxazoles**
RL: DEV (Device component use); IMF (Industrial manufacture); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(cardo; polyamide compns. for porous **polybenzoxazole dielec.** films for semiconductor devices)

IT **Polybenzoxazoles**
RL: DEV (Device component use); IMF (Industrial manufacture); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(fluorine-containing; polyamide compns. for porous **polybenzoxazole dielec.** films for semiconductor devices)

IT Polyoxyalkylenes, **preparation**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(polyacetylene-polyester-; polyamide compns. for porous
polybenzoxazole dielec. films for semiconductor
devices)

IT Polyesters, **preparation**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(polyacetylene-polyoxyalkylene-; polyamide compns. for porous
polybenzoxazole dielec. films for semiconductor
devices)

IT **Dielectric** films
Semiconductor devices
(polyamide compns. for porous **polybenzoxazole dielec**
. films for semiconductor devices)

IT **Polybenzoxazoles**
RL: DEV (Device component use); IMF (Industrial manufacture); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyamide compns. for porous **polybenzoxazole dielec**
. films for semiconductor devices)

IT Polyoxyalkylenes, **preparation**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(polyamide-; polyamide compns. for porous **polybenzoxazole dielec.** films for semiconductor devices)

IT Polyoxyalkylenes, **preparation**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(polyamide-polyester-; polyamide compns. for porous
polybenzoxazole dielec. films for semiconductor
devices)

- IT Polyesters, **preparation**
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (polyamide-polyoxyalkylene-; polyamide compns. for porous **polybenzoxazole dielec.** films for semiconductor devices)
- IT Fluoropolymers, uses
 RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (polybenzoxazole-; polyamide compns. for porous **polybenzoxazole dielec.** films for semiconductor devices)
- IT Cardo polymers
 RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (polybenzoxazoles; polyamide compns. for porous **polybenzoxazole dielec.** films for semiconductor devices)
- IT Polyacetylenes, **preparation**
Polyamides, preparation
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (polyester-polyoxyalkylene-; polyamide compns. for porous **polybenzoxazole dielec.** films for semiconductor devices)
- IT Polyamides, **preparation**
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (polyoxyalkylene-; polyamide compns. for porous **polybenzoxazole dielec.** films for semiconductor devices)
- IT 607739-28-6DP, thermally decomposed 607739-29-7DP, thermally decomposed 607739-30-0DP, thermally decomposed 608095-70-1DP, Ethylene oxide-propylene oxide copolymer bis(2-aminopropyl)ether, polymer with 2,6-biphenylenedicarboxylic acid dichloride, 2,2-bis(3-amino-4-hydroxyphenyl)hexafluoropropane, and 4-ethynyl-2,6-naphthalenedicarboxylic acid dichloride, thermally decomposed 608137-80-0DP, thermally decomposed
 RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (polyamide compns. for porous **polybenzoxazole dielec.** films for semiconductor devices)
- IT 54667-43-5P 393543-15-2P 393543-26-5P 450408-23-8P
450408-24-9P 607739-25-3P 607739-26-4P 607739-27-5P
 608095-69-8P, Ethylene oxide-propylene oxide copolymer bis(2-aminopropyl)ether, polymer with 2,6-Biphenylenedicarboxylic acid dichloride 608137-79-7P 608143-46-0P 608143-81-3P 608143-83-5P
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (polyamide compns. for porous **polybenzoxazole dielec.** films for semiconductor devices)

ACCESSION NUMBER: 2003:715822 CAPLUS
 DOCUMENT NUMBER: 139:246971
 TITLE: Polyamide-based varnish compositions for insulating films and semiconductor devices using them
 INVENTOR(S): Saito, Hidenori; Enoki, Naoshi
 PATENT ASSIGNEE(S): Sumitomo Bakelite Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 24 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003257249	A2	20030912	JP 2002-54177	20020228
PRIORITY APPLN. INFO.:			JP 2002-54177	20020228

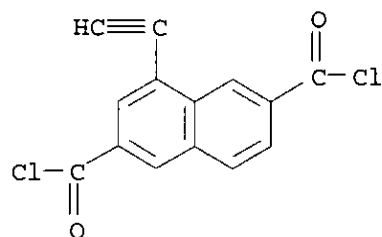
AB The compns. contain a copolymer (C) **prepared** by reacting a polyamide (A) carboxyl, amino or/and hydroxyl groups with an reactive oligomer (B), and a surfactant, and provide microporous films with low **dielec.** constant, good **heat-resistant** and mech. properties and water absorbency. Thus, reacting 93 g ethylene oxide-terminated polystyrene (**preparation** given) with 2.63 g 4-nitrobenzoyl chloride gave a polystyrene 4-aminobenzoate oligomer after reduction, 38.4 g of which was reacted with a copolymer **prepared** from 5.9 g 2,2-bis(3-amino-4-hydroxyphenyl)hexafluoropropane and 27.7 g 4-ethynyl-2,6-naphthalenedicarboxylic chloride to give a C polymer, 20 g of which was further mixed with 1.5 g ethylene oxide-propylene oxide block copolymer in 100 g γ -lactone to give a varnish, which was coated on an aluminum deposited silica wafer, heated to give a **polybenzoxazole** film.

IT **450408-24-9DP**, reaction **product** with 4-aminobenzoate-terminated oligomers
 RL: **IMF (Industrial manufacture)**; PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PYP (Physical process); TEM (Technical or engineered material use); **PREP (Preparation)**; PROC (Process); USES (Uses)
 (in polyamide-based varnish compns. for insulating films and semiconductor devices using them)

RN **450408-24-9 CAPLUS**
 CN 2,6-Naphthalenedicarbonyl dichloride, 4-ethynyl-, polymer with 3,3'-[9H-fluoren-9-ylidenebis(4,1-phenyleneoxy)]bis[6-aminophenol] (9CI) (CA INDEX NAME)

CM 1

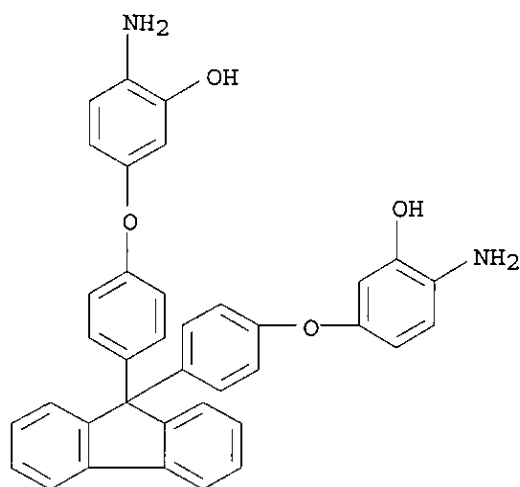
CRN 405931-94-4
 CMF C14 H6 C12 O2



CM 2

CRN 359642-31-2

CMF C37 H28 N2 O4



IC ICM H01B003-30

ICS C08G073-22; C08J005-18; C08L079-04; H01L021-312

CC 42-10 (Coatings, Inks, and Related Products)

Section cross-reference(s): 76

ST polyamide reactive oligomer varnish compn insulating film **prepn**;
semiconductor device **polybenzoxazole** insulating film formation

IT **Dielectric** films

Varnishes

(**fabrication** of insulating films for semiconductor devices
from reactive polyamide-based varnish compns.)

IT **Polyamides**, uses

RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical
process); POF (Polymer in formulation); PYP (Physical process); TEM
(Technical or engineered material use); PREP (Preparation); PROC
(Process); USES (Uses)

(fluorine- and hydroxy-containing, reaction **product** with
4-aminobenzoate-terminated oligomers; in polyamide-based varnish

- compns. for insulating films and semiconductor devices using them)
- IT **Polyamides**, uses
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PYP (Physical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(fluorine-containing; in polyamide-based varnish compns. for insulating films and semiconductor devices using them)
- IT Fluoropolymers, uses
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PYP (Physical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(polyamide-, hydroxy-containing, reaction **product** with 4-aminobenzoate-terminated oligomers; in polyamide-based varnish compns. for insulating films and semiconductor devices using them)
- IT Polyoxyalkylenes, uses
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PYP (Physical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(polyamide-, reaction **product** with 4-aminobenzoate-terminated oligomers; in polyamide-based varnish compns. for insulating films and semiconductor devices using them)
- IT **Polybenzoxazoles**
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(polyamide-; **fabrication** of insulating films for semiconductor devices from reactive polyamide-based varnish compns.)
- IT Fluoropolymers, uses
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PYP (Physical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(polyamide-; in polyamide-based varnish compns. for insulating films and semiconductor devices using them)
- IT **Polyamides**, uses
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(**polybenzoxazole-**; **fabrication** of insulating films for semiconductor devices from reactive polyamide-based varnish compns.)
- IT **Polyamides**, uses
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PYP (Physical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(polyoxyalkylene-, reaction **product** with 4-aminobenzoate-terminated oligomers; in polyamide-based varnish compns. for insulating films and semiconductor devices using them)

- IT Semiconductor devices
(using insulating films formed from reactive polyamide-based varnish compns.)
- IT 122-04-3DP, 4-Nitrobenzoyl chloride, reaction **product** with OH-terminated oligomers, and ethynyl-, amino-, and OH-containing **polyamides** 393543-10-7DP, reaction **product** with 4-aminobenzoate-terminated oligomers 393543-15-2DP, reaction **product** with 4-aminobenzoate-terminated oligomers 445041-09-8DP, reaction **product** with 4-aminobenzoate-terminated oligomers 450408-23-8DP, reaction **product** with 4-aminobenzoate-terminated oligomers **450408-24-9DP**, reaction **product** with 4-aminobenzoate-terminated oligomers 457068-28-9DP, reaction **product** with 4-aminobenzoate-terminated oligomers
RL: IMF (**Industrial manufacture**); PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PYP (Physical process); TEM (Technical or engineered material use); **PREP (Preparation)**; PROC (Process); USES (Uses)
(in polyamide-based varnish compns. for insulating films and semiconductor devices using them)
- IT 9003-13-8DP, Polypropylene glycol monobutyl ether, 4-aminobenzoate-terminated, reaction **product** with ethynyl-, amino-, and OH-containing **polyamides**
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PYP (Physical process); TEM (Technical or engineered material use); **PREP (Preparation)**; PROC (Process); USES (Uses)
(in reactive polyamide-based varnish compns. for insulating films and semiconductor devices using them)
- IT 9003-53-6DP, Polystyrene, 4-aminobenzoate-terminated, reaction **product** with ethynyl-, amino-, and OH-containing **polyamides**
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(in reactive polyamide-based varnish compns. for insulating films and semiconductor devices using them)
- IT 106392-12-5, Ethylene oxide-propylene oxide block copolymer
RL: NUU (Other use, unclassified); USES (Uses)
(surfactant; in polyamide-based varnish compns. for insulating films and semiconductor devices using them)
- IT 7440-21-3, Silicon, miscellaneous
RL: MSC (Miscellaneous)
(wafer; **fabrication** of insulating films for semiconductor devices from reactive polyamide-based varnish compns.)

L30 ANSWER 13 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:671172 CAPLUS

DOCUMENT NUMBER: 139:198446

TITLE: Porous **polybenzoxazole** films having extremely low permittivity, their **preparation**, and their use in semiconductor devices

INVENTOR(S): Oki, Hiromi; Enoki, Naoshi

PATENT ASSIGNEE(S): Sumitomo Bakelite Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 21 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003238724	A2	20030827	JP 2002-47120	20020222
PRIORITY APPLN. INFO.:			JP 2002-47120	20020222

AB Compsns. for forming **dielec.** films of interlayer dielects., protection films, solder resists, etc., contg. **polyamides** (A) involving repeating units represented by general formula [NHX(OH)2NHC(O)YCO]_n [X = divalent group selected from those derived from bisaminophenols such as 2,4-diaminoresorcinol, 2,2-bis(3-amino-4-hydroxyphenyl)hexafluoropropane, 9,9-bis[4-[(4-amino-3-hydroxy)phenoxy]phenyl]fluorene, etc.; Y = ≥1 of divalent group derived from dicarboxylic acids such as 3-ethynylphthalic acid, 2,2-bis(3-carboxy-4-ethynylphenyl)propane, 1,2-biphenylenedicarboxylic acid, 4,4'-tolandicarboxylic acid, isophthalic acid, 3,3'-sulfonylbisbenzoic acid, etc.] and oligomers (B), dissolved in 50-99.7% solvents (C), are formed into films by solvent casting method and exposed to vapors free from the solvents to remove the oligomers and to give fine pores in the films. Thus, polymerizing 37.7 g 9,9-bis[(4-amino-3-hydroxy)phenyl]fluorene with 27.7 g 4-ethynyl-2,6-naphthalenedicarboxylic acid dichloride in the presence of Et₃N gave a polyamide with Mw 24,900 and polydispersity 2.2, 3.1 g of which was dissolved in NMP together with 1.3 g polyoxypropylene with Mn 7500, filtered to give a varnish, spin-coated on Al vapor-deposited Si wafers, dried at 120°, exposed to vapor MeOH, and heated at 300° and O concentration ≤100 ppm to give **polybenzoxazole** films. The films were then heated at 400° to decompose oligomer units to give porous **polybenzoxazole** films, vapor-deposited with AL and patterned to give electrodes. The films showed permittivity at 1 MHz 2.1, Tg >450°, and contained ≤5-nm fine pores dispersed uniformly.

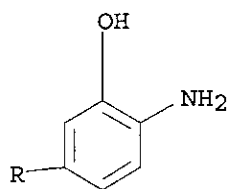
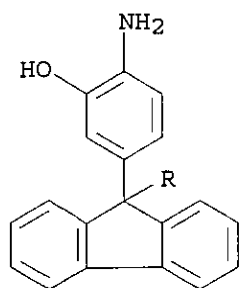
IT 582294-71-1P 582294-72-2P 582294-74-4P
 RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PYP (Physical process); PREP (Preparation); PROC (Process)
 (polyamide-oligomer copolymer; **preparation** of low-k porous **polybenzoxazole** films for semiconductor devices by solvent casting of polyamide-oligomer blends, followed with oligomer removal)

RN 582294-71-1 CAPLUS

CN 2,7-Biphenylenedicarbonyl dichloride, polymer with α-(2-aminomethylethyl)-ω-(2-aminomethylethoxy)poly[oxy(methyl-1,2-ethanediyl)] and 3,3'-(9H-fluoren-9-ylidene)bis[6-aminophenol], block (9CI) (CA INDEX NAME)

CM 1

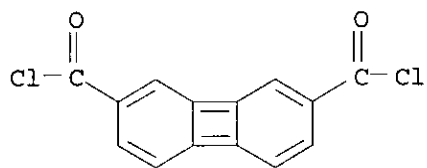
CRN 152480-72-3
 CMF C25 H20 N2 O2



CM 2

CRN 69417-81-8

CMF C14 H6 Cl2 O2

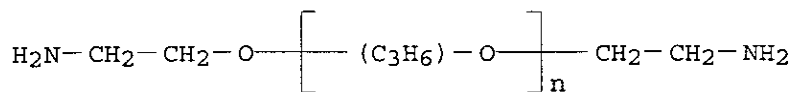


CM 3

CRN 9046-10-0

CMF (C3 H6 O)_n C6 H16 N2 O

CCI IDS, PMS



2 (D1-Me)

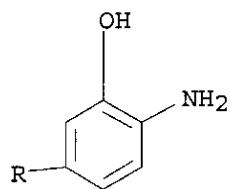
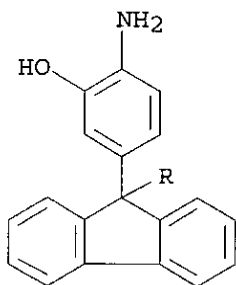
RN 582294-72-2 CAPLUS

CN Benzoyl chloride, 4,4'-(1,2-ethynediyl)bis-, polymer with
 α -(2-aminomethylethyl)- ω -(2-aminomethylethoxy)poly[oxy(methyl-
 1,2-ethanediyl)] and 3,3'-(9H-fluoren-9-ylidene)bis[6-aminophenol], block
 (9CI) (CA INDEX NAME)

CM 1

CRN 152480-72-3

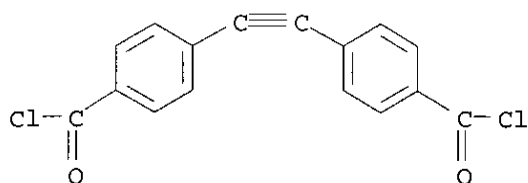
CMF C25 H20 N2 O2



CM 2

CRN 16819-44-6

CMF C16 H8 Cl2 O2

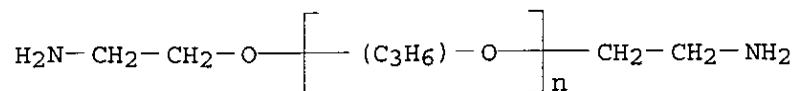


CM 3

CRN 9046-10-0

CMF (C3 H6 O)_n C6 H16 N2 O

CCI IDS, PMS



2 (D1-Me)

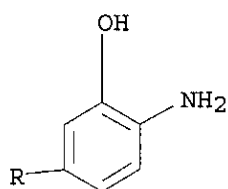
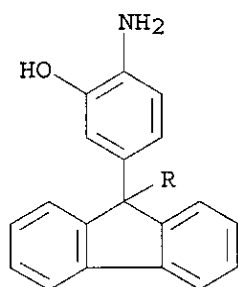
RN 582294-74-4 CAPLUS

CN 1,4-Benzenedicarbonyl dichloride, polymer with α -(2-aminomethylethyl)- ω -(2-aminomethylethoxy)poly[oxy(methyl-1,2-ethanediyl)] and 3,3'-(9H-fluoren-9-ylidene)bis[6-aminophenol], block (9CI) (CA INDEX NAME)

CM 1

CRN 152480-72-3

CMF C25 H20 N2 O2

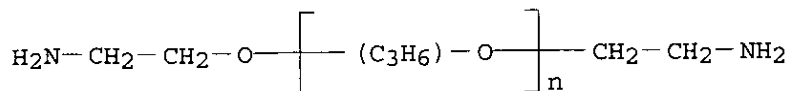


CM 2

CRN 9046-10-0

CMF (C3 H6 O)_n C6 H16 N2 O

CCI IDS, PMS

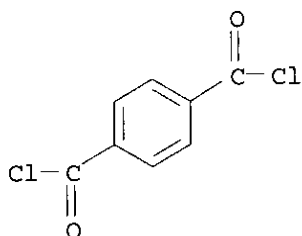


2 (D1-Me)

CM 3

CRN 100-20-9

CMF C8 H4 Cl2 O2



IT 582294-65-3P 582294-67-5P 582294-68-6P,
 9,9-Bis[(4-amino-3-hydroxy)phenyl]fluorene-4,4'-tolandicarboxylic acid
 dichloride copolymer 582294-70-0P 582294-76-6P
 582294-78-8P, 9,9-Bis[(4-amino-3-hydroxy)phenyl]fluorene-4,4'-
 tolandicarboxylic acid dichloride copolymer, sru 582294-79-9P
 RL: DEV (Device component use); IMF (Industrial manufacture);
 TEM (Technical or engineered material use); PREP (Preparation);
 USES (Uses)
 (preparation of low-k porous polybenzoxazole films for
 semiconductor devices by solvent casting of polyamide-oligomer blends,
 followed with oligomer removal)

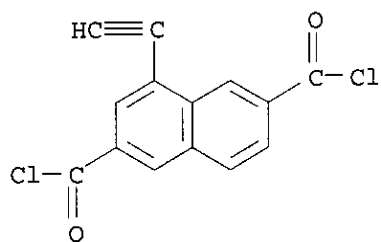
RN 582294-65-3 CAPLUS

CN 2,6-Naphthalenedicarbonyl dichloride, 4-ethynyl-, polymer with
 3,3'-(9H-fluoren-9-ylidene)bis[6-aminophenol] (9CI) (CA INDEX NAME)

CM 1

CRN 405931-94-4

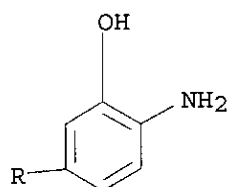
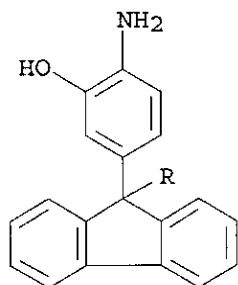
CMF C14 H6 Cl2 O2



CM 2

CRN 152480-72-3

CMF C25 H20 N2 O2



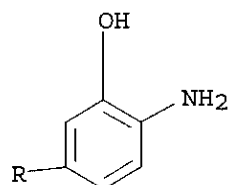
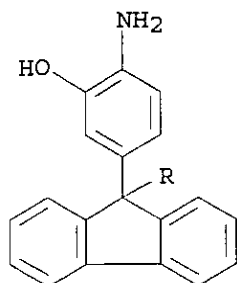
RN 582294-67-5 CAPLUS

CN 2,7-Biphenylenedicarbonyl dichloride, polymer with 3,3'-(9H-fluoren-9-ylidene)bis[6-aminophenol] (9CI) (CA INDEX NAME)

CM 1

CRN 152480-72-3

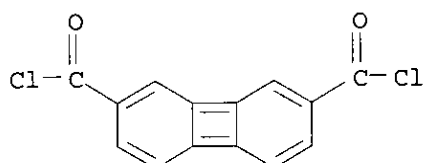
CMF C25 H20 N2 O2



CM 2

CRN 69417-81-8

CMF C14 H6 Cl2 O2



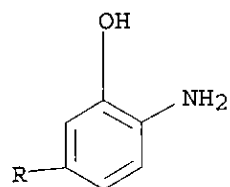
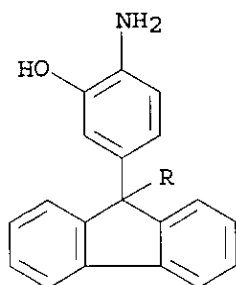
RN 582294-68-6 CAPLUS

CN Benzoyl chloride, 4,4'-(1,2-ethynediyl)bis-, polymer with
3,3'-(9H-fluoren-9-ylidene)bis[6-aminophenol] (9CI) (CA INDEX NAME)

CM 1

CRN 152480-72-3

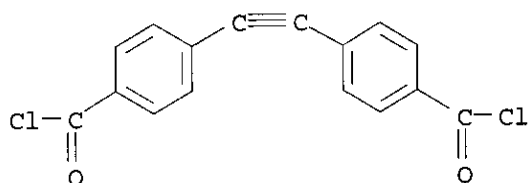
CMF C25 H20 N2 O2



CM 2

CRN 16819-44-6

CMF C16 H8 Cl2 O2



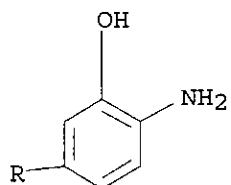
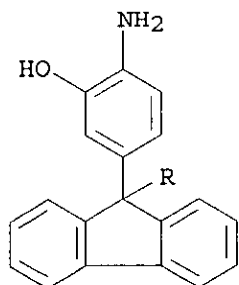
RN 582294-70-0 CAPLUS

CN 1,4-Benzenedicarbonyl dichloride, polymer with 3,3'-(9H-fluoren-9-ylidene)bis[6-aminophenol] (9CI) (CA INDEX NAME)

CM 1

CRN 152480-72-3

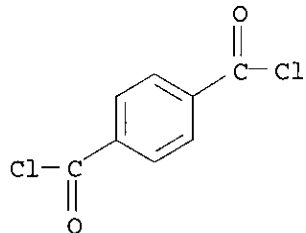
CMF C25 H20 N2 O2



CM 2

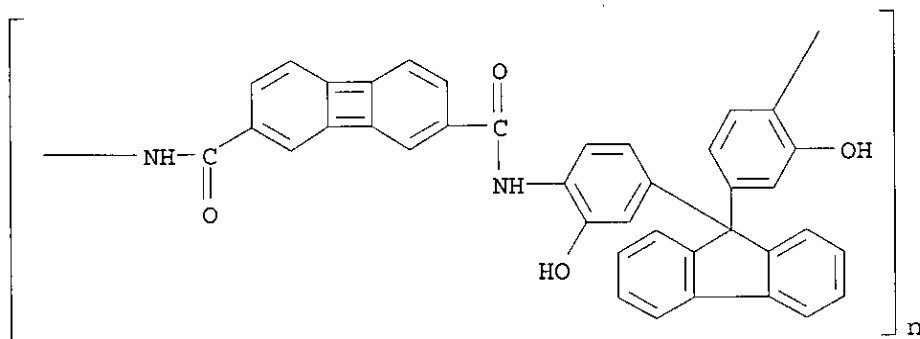
CRN 100-20-9

CMF C8 H4 Cl2 O2



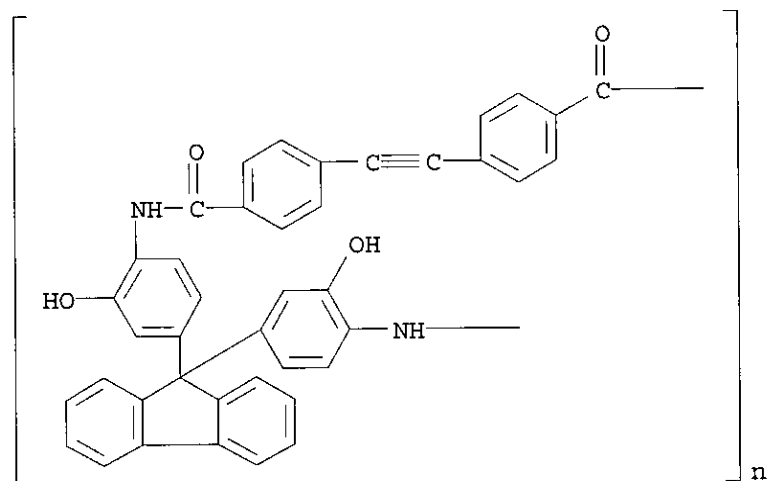
RN 582294-76-6 CAPLUS

CN Poly[iminocarbonyl-2,7-biphenylenediylcarbonylimino(2-hydroxy-1,4-phenylene)-9H-fluoren-9-ylidene(3-hydroxy-1,4-phenylene)] (9CI) (CA INDEX NAME)



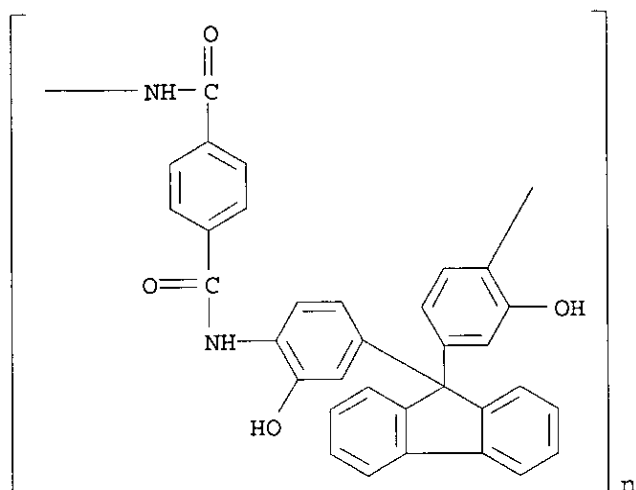
RN 582294-78-8 CAPLUS

CN Poly[imino(2-hydroxy-1,4-phenylene)-9H-fluoren-9-ylidene(3-hydroxy-1,4-phenylene)iminocarbonyl-1,4-phenylene-1,2-ethynediyl-1,4-phenylenecarbonyl] (9CI) (CA INDEX NAME)



RN 582294-79-9 CAPLUS

CN Poly[iminocarbonyl-1,4-phenylenecarbonylimino(2-hydroxy-1,4-phenylene)-9H-fluoren-9-ylidene(3-hydroxy-1,4-phenylene)] (9CI) (CA INDEX NAME)



- IC ICM C08J009-04
ICS C08G069-32; H01L021-312; C08L077-06
- CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 74, 76
- ST **polybenzoxazole** porous film low permittivity **prepn**;
polyamide cyclization condensation **polybenzoxazole prepn**
oligomer pyrolysis; polyoxyalkylene oligomer polyamide soln solvent
casting; semiconductor device **polybenzoxazole dielec**
film
- IT Polyoxyalkylenes, uses
RL: NUU (Other use, unclassified); USES (Uses)
(oligomer; **preparation** of low-k porous **polybenzoxazole**
films for semiconductor devices by solvent casting of
polyamide-oligomer blends, followed with oligomer removal)
- IT Polyoxyalkylenes, processes
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical
process); PYP (Physical process); PREP (Preparation); PROC (Process)
(polyamide-, block, polyamide-oligomer copolymer; **preparation** of
low-k porous **polybenzoxazole** films for semiconductor devices
by solvent casting of polyamide-oligomer blends, followed with oligomer
removal)
- IT **Polyamides**, processes
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical
process); PYP (Physical process); PREP (Preparation); PROC (Process)
(polyoxyalkylene-, block, polyamide-oligomer copolymer; **prepn**
. of low-k porous **polybenzoxazole** films for semiconductor
devices by solvent casting of polyamide-oligomer blends, followed with
oligomer removal)
- IT **Dielectric** films
Semiconductor devices
(**preparation** of low-k porous **polybenzoxazole** films for
semiconductor devices by solvent casting of polyamide-oligomer blends,
followed with oligomer removal)

- IT Polyoxyalkylenes, processes
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PYP (Physical process); REM (Removal or disposal); PROC (Process)
 (preparation of low-k porous polybenzoxazole films for semiconductor devices by solvent casting of polyamide-oligomer blends, followed with oligomer removal)
- IT Polybenzoxazoles
 RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (preparation of low-k porous polybenzoxazole films for semiconductor devices by solvent casting of polyamide-oligomer blends, followed with oligomer removal)
- IT Polyamides, preparation
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (preparation of low-k porous polybenzoxazole films for semiconductor devices by solvent casting of polyamide-oligomer blends, followed with oligomer removal)
- IT 9046-10-0, Polypropylene glycol bis(2-aminopropyl ether)
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PYP (Physical process); REM (Removal or disposal); PROC (Process)
 (oligomer; preparation of low-k porous polybenzoxazole films for semiconductor devices by solvent casting of polyamide-oligomer blends, followed with oligomer removal)
- IT 25322-69-4
 RL: NUU (Other use, unclassified); USES (Uses)
 (oligomer; preparation of low-k porous polybenzoxazole films for semiconductor devices by solvent casting of polyamide-oligomer blends, followed with oligomer removal)
- IT 582294-71-1P 582294-72-2P 582294-73-3P
 582294-74-4P
 RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PYP (Physical process); PREP (Preparation); PROC (Process)
 (polyamide-oligomer copolymer; preparation of low-k porous polybenzoxazole films for semiconductor devices by solvent casting of polyamide-oligomer blends, followed with oligomer removal)
- IT 582294-65-3P 582294-66-4P, 4,4'-Diamino-3,3'-dihydroxydiphenyl ether-5-phenylethynylisophthalic acid dichloride copolymer
 582294-67-5P 582294-68-6P, 9,9-Bis[(4-amino-3-hydroxy)phenyl]fluorene-4,4'-tolandicarboxylic acid dichloride copolymer
 582294-69-7P 582294-70-0P 582294-75-5P, 4,4'-Diamino-3,3'-dihydroxydiphenyl ether-5-phenylethynylisophthalic acid dichloride copolymer, sru 582294-76-6P 582294-78-8P,
 9,9-Bis[(4-amino-3-hydroxy)phenyl]fluorene-4,4'-tolandicarboxylic acid dichloride copolymer, sru 582294-79-9P 583032-41-1P
 RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (preparation of low-k porous polybenzoxazole films for

semiconductor devices by solvent casting of polyamide-oligomer blends, followed with oligomer removal)

IT 9003-11-6, Ethylene oxide-propylene oxide copolymer
 RL: NUU (Other use, unclassified); USES (Uses)
 (preparation of low-k porous polybenzoxazole films for semiconductor devices by solvent casting of polyamide-oligomer blends, followed with oligomer removal)

IT 64-17-5, Ethanol, uses 67-56-1, Methanol, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (preparation of low-k porous polybenzoxazole films for semiconductor devices by solvent casting of polyamide-oligomer blends, followed with oligomer removal by exposure to vapor of)

L30 ANSWER 14 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:671152 CAPLUS

DOCUMENT NUMBER: 139:189377

TITLE: **Heat-resistant polybenzoxazole** precursors with excellent moldability, **polybenzoxazoles**, and **dielectric** materials and semiconductor devices using them

INVENTOR(S): Ishida, Yuichi; Enoki, Naoshi

PATENT ASSIGNEE(S): Sumitomo Bakelite Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003238685	A2	20030827	JP 2002-40743	20020218
PRIORITY APPLN. INFO.:			JP 2002-40743	20020218

AB The precursors, showing good solubility in organic solvents, have units [NHX(OH)2NHC:OYC:O]m[NHX(OH)2NHC:OZC:O]n [X = tetravalent aromatic group; Y = Q1OQ2C.tplbond.CX2; Q1 = benzenetriyl; Q2 = phenylene; X2 = H, aryl, aromatic group; Z = divalent aromatic group; m > 0; n ≥ 0; m + n = 2-1000; m/(m + n) = 0.5-1].

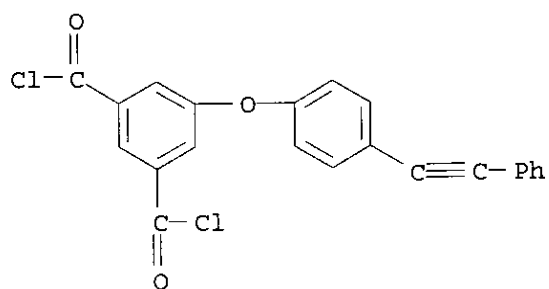
IT 581106-84-5P 581106-85-6P
 RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (crosslinked; **heat-resistant polybenzoxazole** precursors having ethynylphenoxy groups with good solubility in organic solvents for **dielec.** films for semiconductor devices)

RN 581106-84-5 CAPLUS

CN 1,3-Benzenedicarbonyl dichloride, 5-[4-(phenylethynyl)phenoxy]-, polymer with 4,4'-(9H-fluoren-9-ylidene)bis[2-aminophenol] (9CI) (CA INDEX NAME)

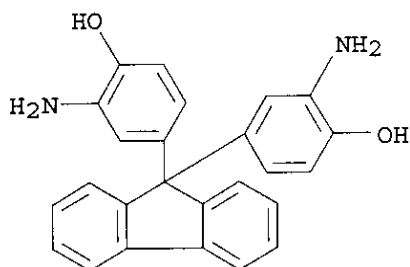
CM 1

CRN 432026-03-4
CMF C22 H12 Cl2 O3

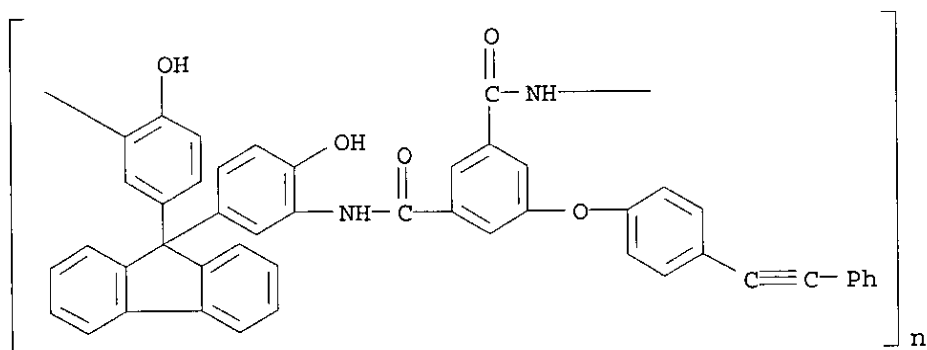


CM 2

CRN 20638-07-7
CMF C25 H20 N2 O2



RN 581106-85-6 CAPLUS
CN Poly[iminocarbonyl[5-[4-(phenylethynyl)phenoxy]-1,3-phenylene]carbonylimino(6-hydroxy-1,3-phenylene)-9H-fluoren-9-ylidene(4-hydroxy-1,3-phenylene)] (9CI) (CA INDEX NAME)



- IC ICM C08G073-22
ICS C08J005-18; H01L021-312; C08L079-08
- CC 76-3 (Electric Phenomena)
Section cross-reference(s): 38
- ST **heat resistance polybenzoxazole** precursor
interlayer **dielec**; **polybenzoxazole** precursor
ethynylphenoxy group crosslinking semiconductor; semiconductor device
phenylethynylphenoxyisophthalic **polybenzoxazole** precursor soly
- IT **Polyamides, preparation**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(aromatic, fluorine- and hydroxy-containing, precursors; **heat-resistant polybenzoxazole** precursors having
ethynylphenoxy groups with good solubility in organic solvents for
dielec. films for semiconductor devices)
- IT **Polyamides, preparation**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(aromatic, hydroxy-containing, precursors; **heat-resistant polybenzoxazole** precursors having ethynylphenoxy groups with
good solubility in organic solvents for **dielec.** films for
semiconductor devices)
- IT **Polybenzoxazoles**
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or
engineered material use); PREP (Preparation); USES (Uses)
(crosslinked; **heat-resistant polybenzoxazole** precursors having ethynylphenoxy groups with
good solubility in organic solvents for **dielec.** films for
semiconductor devices)
- IT **Heat-resistant materials**
(films; **heat-resistant polybenzoxazole**
precursors having ethynylphenoxy groups with good solubility in organic
solvents for **dielec.** films for semiconductor devices)
- IT **Polybenzoxazoles**
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or
engineered material use); PREP (Preparation); USES (Uses)
(fluorine-containing, crosslinked; **heat-resistant polybenzoxazole** precursors having ethynylphenoxy groups with
good solubility in organic solvents for **dielec.** films for
semiconductor devices)
- IT **Dielectric films**
Semiconductor devices
(**heat-resistant polybenzoxazole**
precursors having ethynylphenoxy groups with good solubility in organic
solvents for **dielec.** films for semiconductor devices)
- IT **Films**
(**heat-resistant; heat-resistant polybenzoxazole** precursors having ethynylphenoxy groups with
good solubility in organic solvents for **dielec.** films for
semiconductor devices)
- IT **Fluoropolymers, preparation**

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(polyamide-, aromatic, hydroxy-containing, precursors; **heat-resistant polybenzoxazole** precursors having ethynylphenoxy groups with good solubility in organic solvents for **dielec.** films for semiconductor devices)

IT Polyethers, **preparation**

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(polyamide-, hydroxy-containing, aromatic, precursors; **heat-resistant polybenzoxazole** precursors having ethynylphenoxy groups with good solubility in organic solvents for **dielec.** films for semiconductor devices)

IT Fluoropolymers, properties

Polyethers, properties

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**polybenzoxazole-**, crosslinked; **heat-resistant polybenzoxazole** precursors having ethynylphenoxy groups with good solubility in organic solvents for **dielec.** films for semiconductor devices)

IT **Polybenzoxazoles**

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-, crosslinked; **heat-resistant polybenzoxazole** precursors having ethynylphenoxy groups with good solubility in organic solvents for **dielec.** films for semiconductor devices)

IT **Polyamides, preparation**

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(polyether-, hydroxy-containing, aromatic, precursors; **heat-resistant polybenzoxazole** precursors having ethynylphenoxy groups with good solubility in organic solvents for **dielec.** films for semiconductor devices)

IT 581106-78-7P, 3,3'-Diamino-4,4'-dihydroxybiphenyl-5-[4-(2-phenylethynyl)phenoxy]isophthalic dichloride copolymer 581106-79-8P
581106-80-1P 581106-81-2P 581106-82-3P 581106-83-4P
581106-84-5P 581106-85-6P 581106-86-7P

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(crosslinked; **heat-resistant polybenzoxazole** precursors having ethynylphenoxy groups with good solubility in organic solvents for **dielec.** films for semiconductor devices)

L30 ANSWER 15 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:559934 CAPLUS

DOCUMENT NUMBER: 139:118392

TITLE: **Electrically** insulating coating varnishes,
and **electric** insulator films and

INVENTOR(S): semiconductor devices using them
Ishikawa, Tadahiro; Saito, Hidenori; Murayama,
Kazumoto
PATENT ASSIGNEE(S): Sumitomo Bakelite Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 27 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003206441	A2	20030722	JP 2002-280028	20020925
PRIORITY APPLN. INFO.:			JP 2001-294864	A 20010926

AB The coating varnishes contain (A) copolymers **prepared** by reaction of **polyamides** having repeating units
 $[NHX(OR_1)(OR_2)NHC(O)Y_1CO]_m[NHX(OR_3)(OR_4)NHC(O)Y_2CO]_n$ [$m > 0$; $n \geq 0$; $2 \leq m + n \leq 1000$; $0.05 \leq m/(m + n) \leq 1$; $R_1-R_4 =$
H, monovalent organic group; X = aromatic tetravalent group; $Y_1 =$ acetylenic group-containing divalent group, biphenylenediyl; $Y_2 =$ divalent group] with reactive oligomers having substituents reactive towards carboxyl, amino, or hydroxy groups of the **polyamides**, (B) acetylenes, and (C) organic solvents. Thus, 2.94 mmol 2,2-bis(3-amino-4-hydroxyphenyl)hexafluoropropane was polymerized with 3.0 mmol 2-phenylethynylterephthaloyl chloride in N-methyl-2-pyrrolidone in the presence of Et₃N and the reaction **product** was condensed with 0.12 mmol 4-aminobenzoate ester-terminated styrene oligomer in γ -butyrolactone to give a copolymer having Mw 20,000 and Mw/Mn 2.22. A varnish containing the copolymer 1.0, 4,4'-bis(phenylethynyl)biphenyl (**preparation** given) 0.2, and cyclohexanone 8.8 g was applied on a Si wafer and heated at 100° for 30 min, at 200° for 30 min, and at 400° for 1 h to form a 1.23- μ m film showing **dielec.** constant 2.2, 5% weight-loss temperature 521°, T_g >450°, elastic modulus 5 GPa, and ≤ 10 -nm fine pores.

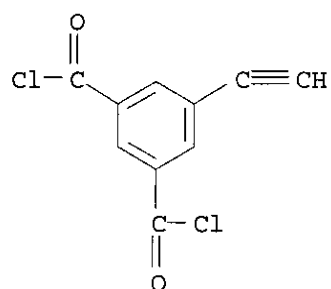
IT 562870-49-9P 562870-51-3P 562870-53-5P
562870-54-6P 562870-55-7P 562870-56-8P
RL: IMF (Industrial manufacture); PRP (Properties); TEM
(Technical or engineered material use); PREP (Preparation); USES
(Uses)
(benzoxazole ring-containing; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

RN 562870-49-9 CAPLUS

CN 1,3-Benzenedicarbonyl dichloride, 5-ethynyl-, polymer with α -(2-aminopropyl)- ω -(2-aminopropoxy)poly[oxy(methyl-1,2-ethanediyl)], 4,4'-bis(phenylethynyl)-1,1'-biphenyl and 4,4'-(9H-fluoren-9-ylidene)bis[2-aminophenol] (9CI) (CA INDEX NAME)

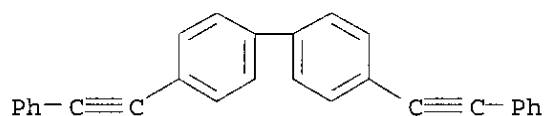
CM 1

CRN 393543-05-0
CMF C10 H4 Cl2 O2



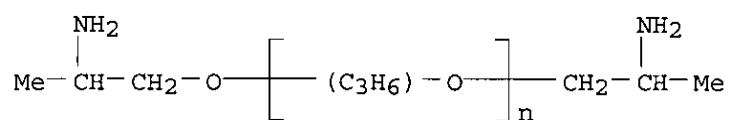
CM 2

CRN 53304-21-5
CMF C28 H18



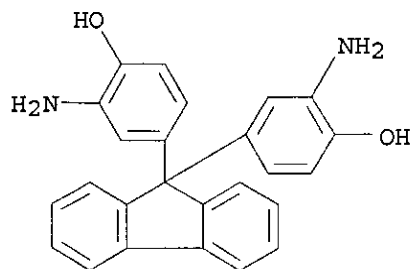
CM 3

CRN 26403-64-5
CMF (C3 H6 O)n C6 H16 N2 O
CCI IDS, PMS



CM 4

CRN 20638-07-7
CMF C25 H20 N2 O2



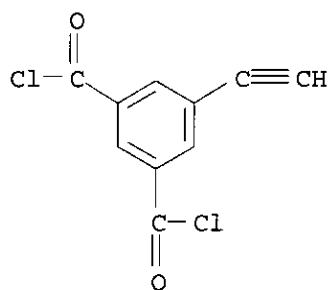
RN 562870-51-3 CAPLUS

CN 1,3-Benzenedicarbonyl dichloride, 5-ethynyl-, polymer with α -(2-aminopropyl)- ω -(2-aminopropoxy)poly[oxy(methyl-1,2-ethanediyl)], 4,4'-(9H-fluoren-9-ylidene)bis[2-aminophenol] and 1,3,5-tris(phenylethynyl)benzene (9CI) (CA INDEX NAME)

CM 1

CRN 393543-05-0

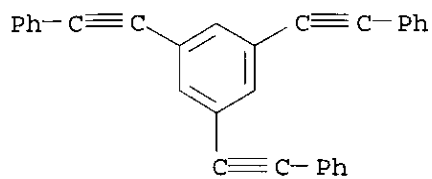
CMF C10 H4 Cl2 O2



CM 2

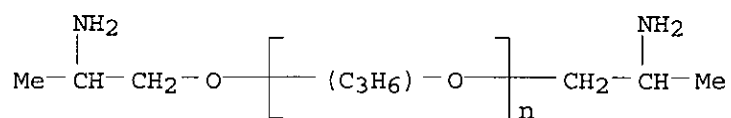
CRN 118688-56-5

CMF C30 H18



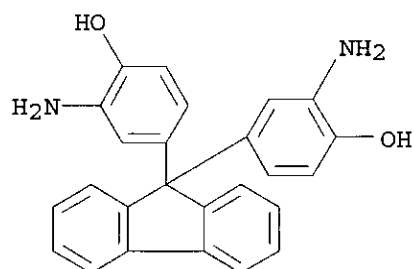
CM 3

CRN 26403-64-5
 CMF (C3 H6 O)n C6 H16 N2 O
 CCI IDS, PMS



CM 4

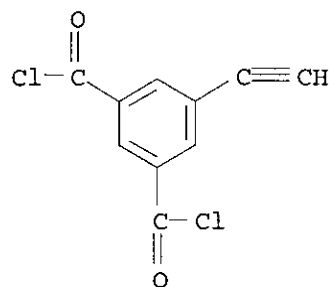
CRN 20638-07-7
 CMF C25 H20 N2 O2



RN 562870-53-5 CAPLUS
 CN 1,3-Benzenedicarbonyl dichloride, 5-ethynyl-, polymer with
 α -(2-aminopropyl)- ω -(2-aminopropoxy)poly[oxy(methyl-1,2-ethanediyl)], 1,4-bis(phenylethynyl)benzene and 4,4'-(9H-fluoren-9-ylidene)bis[2-aminophenol] (9CI) (CA INDEX NAME)

CM 1

CRN 393543-05-0
 CMF C10 H4 Cl2 O2

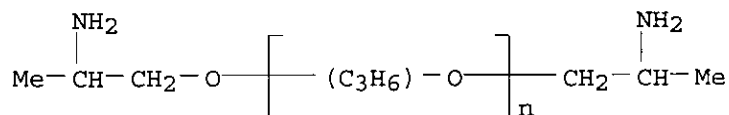


CM 2

CRN 26403-64-5

CMF (C3 H6 O)n C6 H16 N2 O

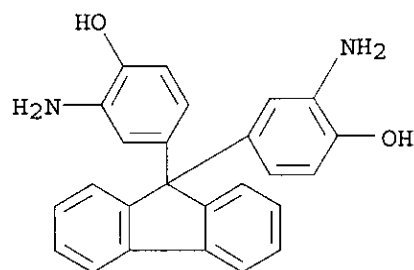
CCI IDS, PMS



CM 3

CRN 20638-07-7

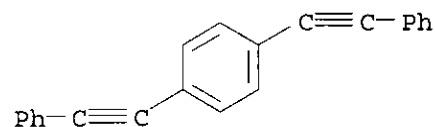
CMF C25 H20 N2 O2



CM 4

CRN 1849-27-0

CMF C22 H14

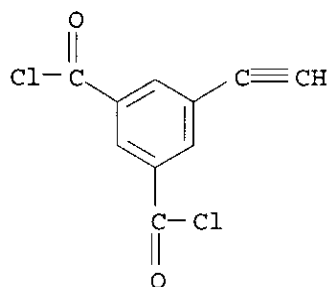


RN 562870-54-6 CAPLUS

CN 1,3-Benzenedicarbonyl dichloride, 5-ethynyl-, polymer with α -(2-aminopropyl)- ω -(2-aminopropoxy)poly[oxy(methyl-1,2-ethanediyl)], 1,4-bis(phenylethynyl)naphthalene and 4,4'-diamino[1,1'-biphenyl]-3,3'-diol (9CI) (CA INDEX NAME)

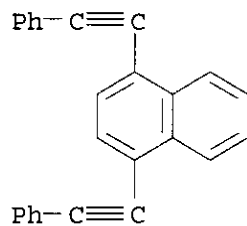
CM 1

CRN 393543-05-0
CMF C10 H4 Cl2 O2



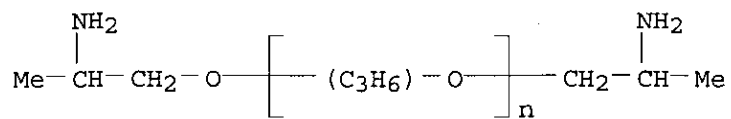
CM 2

CRN 73888-61-6
CMF C26 H16



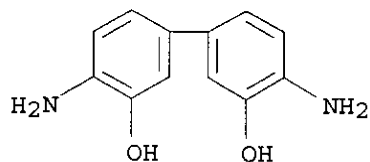
CM 3

CRN 26403-64-5
CMF (C3 H6 O)_n C6 H16 N2 O
CCI IDS, PMS



CM 4

CRN 2373-98-0
CMF C12 H12 N2 O2



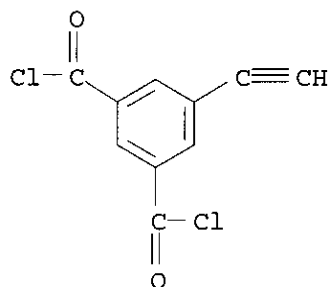
RN 562870-55-7 CAPLUS

CN 2,7-Biphenylenedicarbonyl dichloride, polymer with α -(2-aminopropyl)-
 ω -(2-aminopropoxy)poly[oxy(methyl-1,2-ethanediyl)],
 1,4-bis(phenylethynyl)benzene, 4,4'-diamino[1,1'-biphenyl]-3,3'-diol and
 5-ethynyl-1,3-benzenedicarbonyl dichloride (9CI) (CA INDEX NAME)

CM 1

CRN 393543-05-0

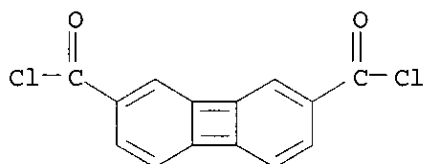
CMF C10 H4 Cl2 O2



CM 2

CRN 69417-81-8

CMF C14 H6 Cl2 O2

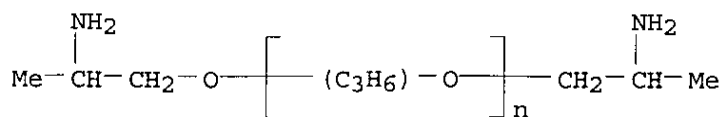


CM 3

CRN 26403-64-5

CMF (C3 H6 O)_n C6 H16 N2 O

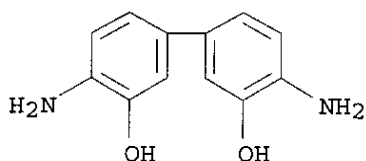
CCI IDS, PMS



CM 4

CRN 2373-98-0

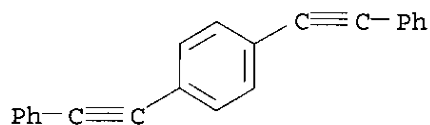
CMF C12 H12 N2 O2



CM 5

CRN 1849-27-0

CMF C22 H14



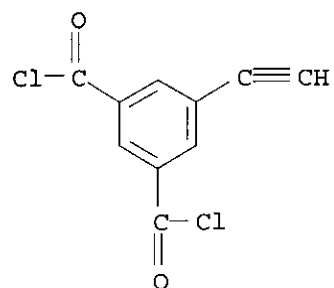
RN 562870-56-8 CAPLUS

CN 1,3-Benzenedicarbonyl dichloride, 5-ethynyl-, polymer with α -(2-aminopropyl)- ω -(2-aminopropoxy)poly[oxy(methyl-1,2-ethanediyl)], 1,4-benzenedicarbonyl dichloride, 1,4-bis(phenylethynyl)naphthalene, 4,4'-diamino[1,1'-biphenyl]-3,3'-diol and 4,4'-(9H-fluoren-9-ylidene)bis[2-aminophenol], block (9CI) (CA INDEX NAME)

CM 1

CRN 393543-05-0

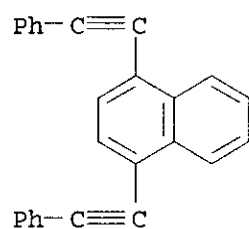
CMF C10 H4 Cl2 O2



CM 2

CRN 73888-61-6

CMF C26 H16

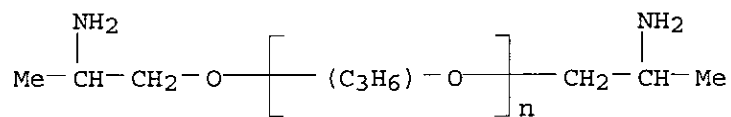


CM 3

CRN 26403-64-5

CMF (C3 H6 O)_n C6 H16 N2 O

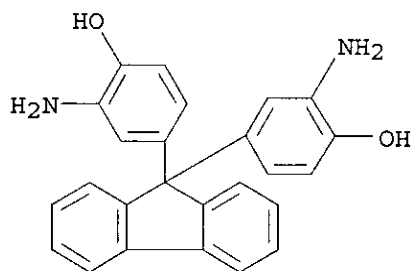
CCI IDS, PMS



CM 4

CRN 20638-07-7

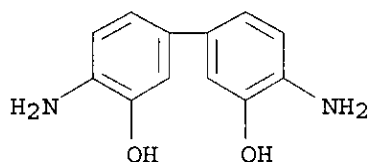
CMF C25 H20 N2 O2



CM 5

CRN 2373-98-0

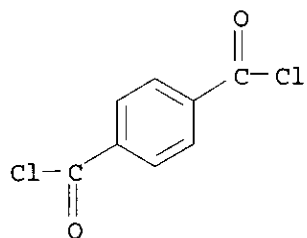
CMF C12 H12 N2 O2



CM 6

CRN 100-20-9

CMF C8 H4 C12 O2



IT 562870-40-0P 562870-44-4P 562870-45-5P

562870-46-6P 562870-47-7P

RL: IMF (Industrial manufacture); POF (Polymer in formulation);
RCT (Reactant); TEM (Technical or engineered material use); PREP
(Preparation); RACT (Reactant or reagent); USES (Uses)

(coating varnishes containing OH- and acetylenic group-containing
polyamides and acetylenes for nanoporous dielec.

crosslinked polybenzoxazole films and semiconductor devices)

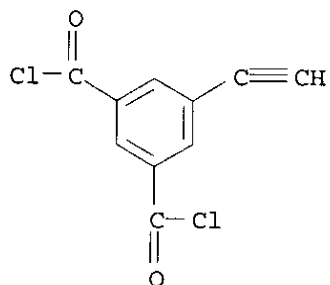
RN 562870-40-0 CAPLUS

CN 1,3-Benzenedicarbonyl dichloride, 5-ethynyl-, polymer with
 α -(2-aminopropyl)- ω -(2-aminopropoxy)poly[oxy(methyl-1,2-ethanediyl)] and 4,4'-(9H-fluoren-9-ylidene)bis[2-aminophenol], block
 (9CI) (CA INDEX NAME)

CM 1

CRN 393543-05-0

CMF C10 H4 Cl2 O2

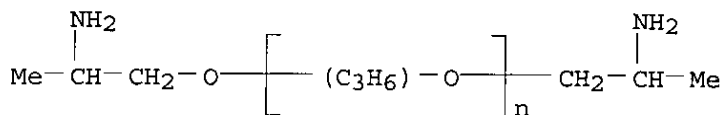


CM 2

CRN 26403-64-5

CMF (C3 H6 O)_n C6 H16 N2 O

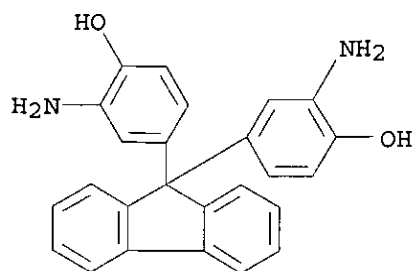
CCI IDS, PMS



CM 3

CRN 20638-07-7

CMF C25 H20 N2 O2



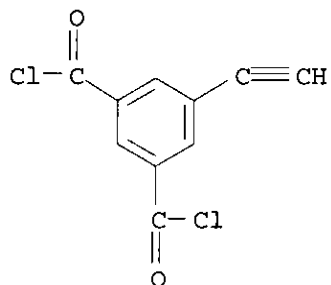
RN 562870-44-4 CAPLUS

CN 1,3-Benzenedicarbonyl dichloride, 5-ethynyl-, polymer with
4,4'-(9H-fluoren-9-ylidene)bis[2-aminophenol] and 2-oxepanone, block (9CI)
(CA INDEX NAME)

CM 1

CRN 393543-05-0

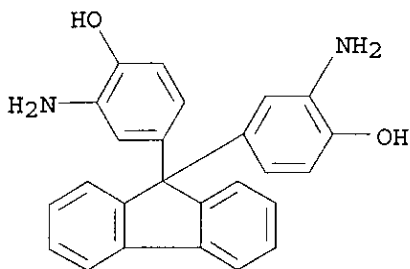
CMF C10 H4 C12 O2



CM 2

CRN 20638-07-7

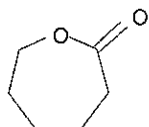
CMF C25 H20 N2 O2



CM 3

CRN 502-44-3

CMF C6 H10 O2



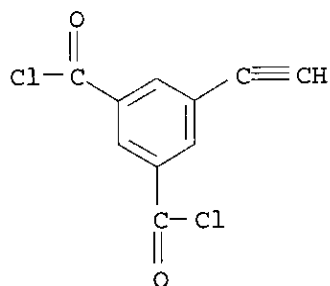
RN 562870-45-5 CAPLUS

CN 1,3-Benzenedicarbonyl dichloride, 5-ethynyl-, polymer with
4,4'-(9H-fluoren-9-ylidene)bis[2-aminophenol] and (1-
methylethenyl)benzene, block (9CI) (CA INDEX NAME)

CM 1

CRN 393543-05-0

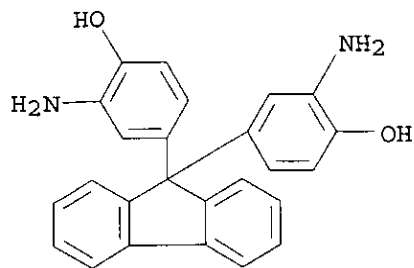
CMF C10 H4 Cl2 O2



CM 2

CRN 20638-07-7

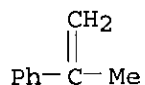
CMF C25 H20 N2 O2



CM 3

CRN 98-83-9

CMF C9 H10



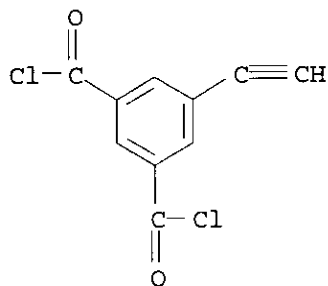
RN 562870-46-6 CAPLUS

CN 2,7-Biphenylenedicarbonyl dichloride, polymer with α -(2-aminopropyl)-
 ω -(2-aminopropoxy)poly[oxy(methyl-1,2-ethanediyl)],
 4,4'-diamino[1,1'-biphenyl]-3,3'-diol and 5-ethynyl-1,3-benzenedicarbonyl
 dichloride, block (9CI) (CA INDEX NAME)

CM 1

CRN 393543-05-0

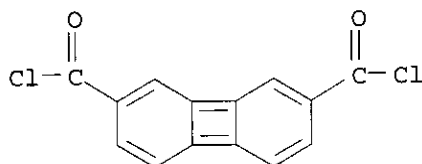
CMF C10 H4 Cl2 O2



CM 2

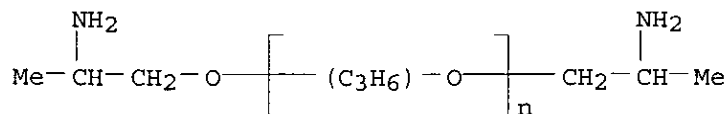
CRN 69417-81-8

CMF C14 H6 Cl2 O2



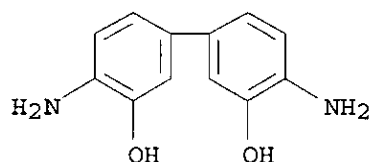
CM 3

CRN 26403-64-5
 CMF (C3 H6 O)n C6 H16 N2 O
 CCI IDS, PMS



CM 4

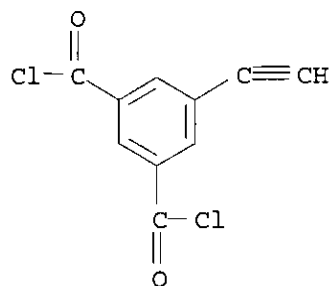
CRN 2373-98-0
 CMF C12 H12 N2 O2



RN 562870-47-7 CAPLUS
 CN 1,3-Benzenedicarbonyl dichloride, 5-ethynyl-, polymer with
 α -(2-aminopropyl)- ω -(2-aminopropoxy)poly[oxy(methyl-1,2-ethanediyl)], 1,4-benzenedicarbonyl dichloride, 4,4'-diamino[1,1'-biphenyl]-3,3'-diol and 4,4'-(9H-fluoren-9-ylidene)bis[2-aminophenol],
 block (9CI) (CA INDEX NAME)

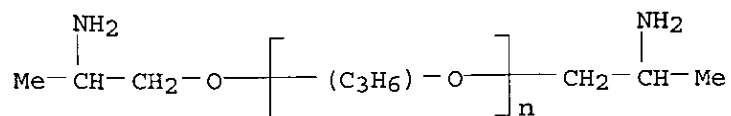
CM 1

CRN 393543-05-0
 CMF C10 H4 Cl2 O2



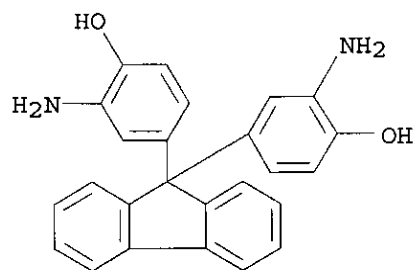
CM 2

CRN 26403-64-5
 CMF (C3 H6 O)n C6 H16 N2 O
 CCI IDS, PMS



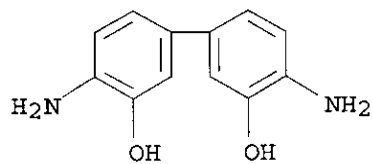
CM 3

CRN 20638-07-7
 CMF C25 H20 N2 O2



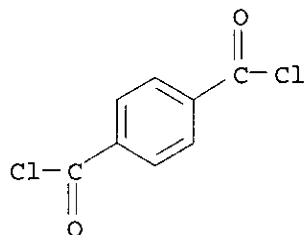
CM 4

CRN 2373-98-0
 CMF C12 H12 N2 O2



CM 5

CRN 100-20-9
 CMF C8 H4 Cl2 O2



- IC ICM C09D179-04
ICS C08G073-22; C09D005-25; C09D201-02; H01B003-30; H01L021-312
- CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 37, 42, 76
- ST coating varnish **dielec** acetylene polyamide semiconductor;
elec insulator film polyamide acetylene **polybenzoxazole**;
heat resistance dielec film acetylene
polybenzoxazole; nanoporous **dielec** film acetylene
polybenzoxazole semiconductor
- IT Crosslinking agents
(acetylenes; coating varnishes containing OH- and acetylenic
group-containing
polyamides and acetylenes for nanoporous **dielec**.
crosslinked **polybenzoxazole** films and semiconductor devices)
- IT **Polyamides**, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT
(Reactant); TEM (Technical or engineered material use); PREP
(Preparation); RACT (Reactant or reagent); USES (Uses)
(block, cardo, poly(methylstyrene)-; coating varnishes containing OH- and
acetylenic group-containing **polyamides** and acetylenes for
nanoporous **dielec**. crosslinked **polybenzoxazole**
films and semiconductor devices)
- IT Semiconductor devices
Varnishes
(coating varnishes containing OH- and acetylenic group-containing
polyamides and acetylenes for nanoporous **dielec**.
crosslinked **polybenzoxazole** films and semiconductor devices)
- IT Alkynes
RL: IMF (Industrial manufacture); RCT (Reactant); TEM (Technical or
engineered material use); PREP (Preparation); RACT (Reactant or reagent);
USES (Uses)
(crosslinking agents; coating varnishes containing OH- and acetylenic
group-containing **polyamides** and acetylenes for nanoporous
dielec. crosslinked **polybenzoxazole** films and
semiconductor devices)
- IT **Heat-resistant** materials
(**dielec**.; coating varnishes containing OH- and acetylenic
group-containing **polyamides** and acetylenes for nanoporous
dielec. crosslinked **polybenzoxazole** films and
semiconductor devices)
- IT **Polyamides**, uses

RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(fluorine-containing, block, polystyrene-; coating varnishes containing OH-

and

acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT **Electric** insulators

(**heat-resistant**; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT **Dielectric** films

(nanoporous; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT **Polybenzoxazoles**

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyacetylene-, cardo; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT **Polyamides**, uses

RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(polyacetylene-, fluorine-containing, block, polystyrene- or poly(Me methacrylate)-; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT **Polybenzoxazoles**

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyacetylene-, fluorine-containing; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT **Fluoropolymers**, uses

RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(polyacetylene-polyamide-, block, polystyrene- or poly(Me methacrylate)-; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT **Polyesters**, uses

Polyoxyalkylenes, uses

Polyurethanes, uses

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyacetylene-**polybenzoxazole**-, cardo; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT Polyoxyalkylenes, uses

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyacetylene-**polybenzoxazole**-, fluorine-containing; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT Fluoropolymers, uses

Polyesters, uses

Polyoxyalkylenes, uses

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyacetylene-**polybenzoxazole**-; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT Polyethers, uses

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyacetylene-**polybenzoxazole**-polyester-; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT Cardo polymers

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyacetylene-**polybenzoxazole**-polyesters; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT Polyesters, uses

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyacetylene-**polybenzoxazole**-polyether-; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT Fluoropolymers, uses

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyacetylene-**polybenzoxazole**-polyoxyalkylene-; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT Cardo polymers

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyacetylene-**polybenzoxazole**-polyoxyalkylenes; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT Cardo polymers

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyacetylene-**polybenzoxazole**-polyurethanes; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT Cardo polymers

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyacetylene-**polybenzoxazoles**; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT **Polybenzoxazoles**

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyacetylene-polyester-, cardo; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT **Polybenzoxazoles**

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyacetylene-polyester-; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT **Polybenzoxazoles**

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyacetylene-polyester-polyether-; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT **Polybenzoxazoles**

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyacetylene-polyoxyalkylene-, cardo; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT **Polybenzoxazoles**

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyacetylene-polyoxyalkylene-, fluorine-containing; coating varnishes

containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT **Polybenzoxazoles**

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyacetylene-polyoxyalkylene-; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT **Polybenzoxazoles**

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyacetylene-polyurethane-, cardo; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT Polyesters, uses

Polyoxyalkylenes, uses

RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(polyamide-, block, cardo; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT Fluoropolymers, uses

RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(polyamide-, block, polystyrene-; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT Polyesters, uses

Polyoxyalkylenes, uses

RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(polyamide-, block; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT Polyurethanes, uses

RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(polyamide-, cardo; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT Polyacetylenes, uses

RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(polyamide-, fluorine-containing, block, polystyrene- or poly(Me methacrylate)-; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT Polyoxyalkylenes, uses

RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(polyamide-, fluorine-containing, block; coating varnishes containing OH-

and

acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT Polyethers, uses

RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(polyamide-polyester-, block; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT Cardo polymers

RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(polyamide-polyesters, block; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT Polyesters, uses

RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(polyamide-polyether-, block; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT Fluoropolymers, uses

RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(polyamide-polyoxyalkylene-, block; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT Cardo polymers

RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT (Reactant); TEM (Technical or engineered material use); PREP

(Preparation); RACT (Reactant or reagent); USES (Uses)
 (polyamide-polyoxyalkylenes, block; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT Cardo polymers

RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
 (polyamide-polyurethanes; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT Cardo polymers

RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
 (**polyamides**, block, poly(methylstyrene)-; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT Polyacetylenes, uses

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (**polybenzoxazole**-, cardo; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT Polyacetylenes, uses

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (**polybenzoxazole**-, fluorine-containing; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT Polyacetylenes, uses

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (**polybenzoxazole**-polyester-, cardo; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT Polyacetylenes, uses

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (**polybenzoxazole**-polyester-; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT Polyacetylenes, uses

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

- (polybenzoxazole-polyester-polyether-; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)
- IT Polyacetylenes, uses
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polybenzoxazole-polyoxyalkylene-, cardo; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)
- IT Polyacetylenes, uses
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polybenzoxazole-polyoxyalkylene-, fluorine-containing; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)
- IT Polyacetylenes, uses
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polybenzoxazole-polyoxyalkylene-; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)
- IT Polyacetylenes, uses
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polybenzoxazole-polyurethane-, cardo; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)
- IT **Polyamides**, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(polyester-, block, cardo; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)
- IT **Polyamides**, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(polyester-, block; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)
- IT **Polyamides**, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(polyester-polyether-, block; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT **Polyamides**, uses

RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(polyoxyalkylene-, block, cardo; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT **Polyamides**, uses

RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(polyoxyalkylene-, block; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT **Polyamides**, uses

RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(polyoxyalkylene-, fluorine-containing, block; coating varnishes containing

OH-

and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT **Polyamides**, uses

RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(polyurethane-, cardo; coating varnishes containing OH- and acetylenic group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT 562870-48-8P 562870-49-9P 562870-50-2P 562870-51-3P

562870-52-4P 562870-53-5P 562870-54-6P

562870-55-7P 562870-56-8P

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(benzoxazole ring-containing; coating varnishes containing OH- and acetylenic

group-containing **polyamides** and acetylenes for nanoporous **dielec.** crosslinked **polybenzoxazole** films and semiconductor devices)

IT 4194-40-5DP, 3,3'-Diamino-4,4'-dihydroxybiphenyl, polymers with phenylethynylisophthaloyl chloride and aminobenzoate-terminated ester oligomer or ether-ester oligomer, block 20638-07-7DP, 9,9-Bis[(3-amino-4-hydroxy)phenyl]fluorene, polymers with

phenylethynylterephthaloyl chloride and urethane oligomer 393543-14-1DP, polymers with diaminodihydroxybiphenyl and aminobenzoate-terminated ester oligomer or ether-ester oligomer, block 562870-37-5DP, polymers with bis[(aminohydroxy)phenyl]fluorene and urethane oligomer 562870-38-6P, 2,2-Bis(3-amino-4-hydroxyphenyl)hexafluoropropane-2-phenylethynylterephthaloyl chloride-styrene block copolymer 562870-39-7P 562870-40-0P 562870-41-1P 562870-42-2P 562870-43-3P 562870-44-4P 562870-45-5P 562870-46-6P 562870-47-7P

RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(coating varnishes containing OH- and acetylenic group-containing polyamides and acetylenes for nanoporous dielec.

crosslinked polybenzoxazole films and semiconductor devices)

IT 1849-27-0P, 1,4-Bis(phenylethynyl)benzene 53304-21-5P, 4,4'-Bis(phenylethynyl)biphenyl 73888-61-6P 118688-56-5P, 1,3,5-Tris(phenylethynyl)benzene 478070-32-5P

RL: IMF (Industrial manufacture); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(coating varnishes containing OH- and acetylenic group-containing polyamides and acetylenes for nanoporous dielec.

crosslinked polybenzoxazole films and semiconductor devices)

IT 83-53-4, 1,4-Dibromonaphthalene 92-86-4, 4,4'-Dibromobiphenyl 106-37-6, 1,4-Dibromobenzene 536-74-3, Ethynylbenzene 626-39-1, 1,3,5-Tribromobenzene 16400-50-3, 3,3',5,5'-Tetrabromobiphenyl

RL: RCT (Reactant); RACT (Reactant or reagent)

(coating varnishes containing OH- and acetylenic group-containing polyamides and acetylenes for nanoporous dielec.

crosslinked polybenzoxazole films and semiconductor devices)

L30 ANSWER 16 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:479017 CAPLUS

DOCUMENT NUMBER: 139:61281

TITLE: Storage-stable materials and coating varnishes for electrically insulating films and semiconductor devices

INVENTOR(S): Oki, Hiromi; Saito, Hidenori; Enoki, Naoshi

PATENT ASSIGNEE(S): Sumitomo Bakelite Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 25 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003176352	A2	20030624	JP 2001-377448	20011211
PRIORITY APPLN. INFO.:			JP 2001-377448	20011211
AB The materials contain copolymers prepared from (A)				

polyamides $[\text{NHX1NHC}(:\text{O})\text{YC}(:\text{O})]_m[\text{NHX2NHC}(:\text{O})\text{YC}(:\text{O})]_n$ [I; X1 = divalent group selected from structures described in the document; X2 = isomer of X1; Y = ≥ 1 divalent groups selected from structures described in the document; m, n > 0; m + n = 2-1000; m/(m + n) = 0.05-0.5] and (B) oligomers having reactive groups for CO₂H, amino, or OH groups in I. The varnishes comprise the above materials and organic solvents. The insulating films are obtained by heating the materials or the varnishes for condensation and crosslinking to give **polybenzoxazole**-based layers having fine cells. The semiconductor devices have the insulating films as multilayer wirings or surface-protective films. The films show good heat and water resistance and low **dielec.** constant

IT **545446-42-2DP**, 9,9-Bis(3-amino-4-hydroxyphenyl)fluorene-9,9-Bis(4-amino-3-hydroxyphenyl)fluorene-4-ethynyl-2,6-naphthalenedicarboxylic dichloride copolymer, reaction **products** with aminobenzoate-terminated styrene oligomers, pyrolyzed **545446-50-2DP**, reaction **products** with ethylene oxide-propylene oxide block oligomer, pyrolyzed **545446-51-3DP**, reaction **products** with ethylene oxide-propylene oxide block oligomer, pyrolyzed **628726-00-1P 628726-56-7P 628727-03-7P 628727-07-1P 628727-40-2P 628727-85-5P**

RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(storage-stable varnishes for **polybenzoxazole**-based **elec.** insulating films in semiconductors)

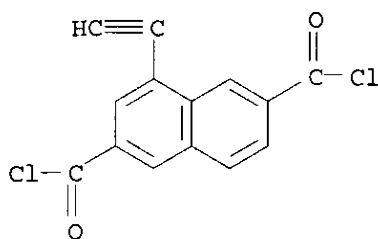
RN **545446-42-2** CAPLUS

CN 2,6-Naphthalenedicarbonyl dichloride, 4-ethynyl-, polymer with 3,3'-(9H-fluoren-9-ylidene)bis[6-aminophenol] and 4,4'-(9H-fluoren-9-ylidene)bis[2-aminophenol] (9CI) (CA INDEX NAME)

CM 1

CRN 405931-94-4

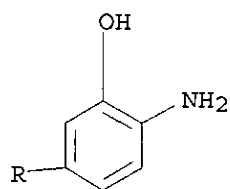
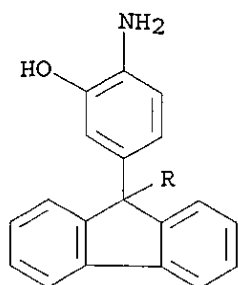
CMF C14 H6 Cl2 O2



CM 2

CRN 152480-72-3

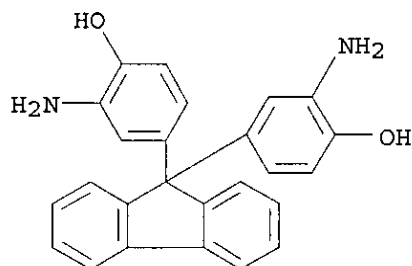
CMF C25 H20 N2 O2



CM 3

CRN 20638-07-7

CMF C25 H20 N2 O2



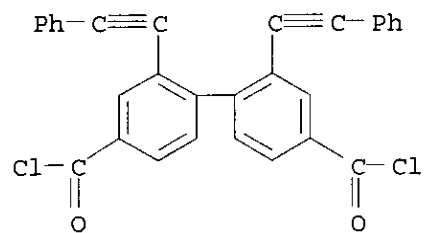
RN 545446-50-2 CAPLUS

CN [1,1'-Biphenyl]-4,4'-dicarbonyl dichloride, 2,2'-bis(phenylethynyl)-, polymer with 3,3'-(9H-fluoren-9-ylidene)bis[6-aminophenol] and 4,4'-(9H-fluoren-9-ylidene)bis[2-aminophenol] (9CI) (CA INDEX NAME)

CM 1

CRN 393543-08-3

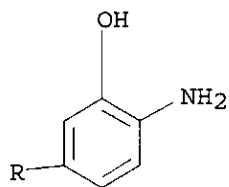
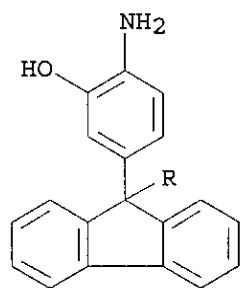
CMF C30 H16 Cl2 O2



CM 2

CRN 152480-72-3

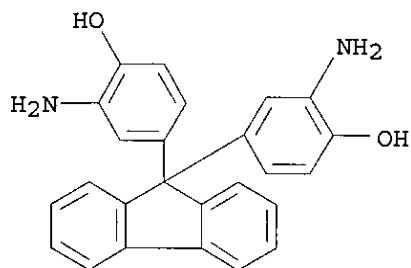
CMF C25 H20 N2 O2



CM 3

CRN 20638-07-7

CMF C25 H20 N2 O2



RN 545446-51-3 CAPLUS

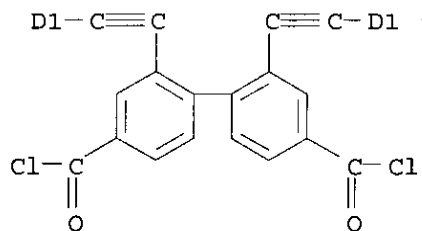
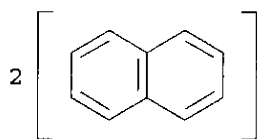
CN [1,1'-Biphenyl]-4,4'-dicarbonyl dichloride, 2,2'-bis(naphthalenylethynyl)-, polymer with 3,3'-(9H-fluoren-9-ylidene)bis[6-aminophenol] and 4,4'-(9H-fluoren-9-ylidene)bis[2-aminophenol] (9CI) (CA INDEX NAME)

CM 1

CRN 393588-30-2

CMF C38 H20 Cl2 O2

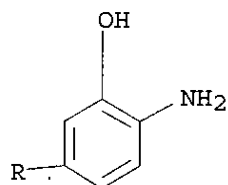
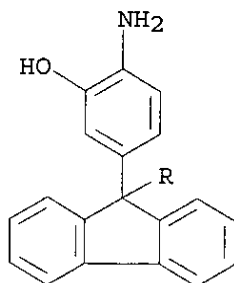
CCI IDS



CM 2

CRN 152480-72-3

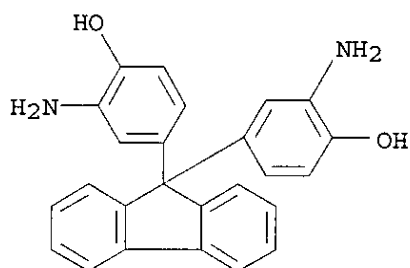
CMF C25 H20 N2 O2



CM 3

CRN 20638-07-7

CMF C25 H20 N2 O2



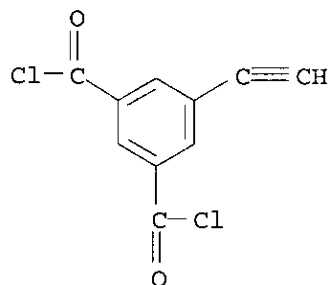
RN 628726-00-1 CAPLUS

CN 1,3-Benzenedicarbonyl dichloride, 5-ethynyl-, polymer with α -(2-aminopropyl)- ω -(2-aminopropoxy)poly[oxy(methyl-1,2-ethanediyl)], 3,3'-(9H-fluoren-9-ylidene)bis[6-aminophenol] and 4,4'-(9H-fluoren-9-ylidene)bis[2-aminophenol], block (9CI) (CA INDEX NAME)

CM 1

CRN 393543-05-0

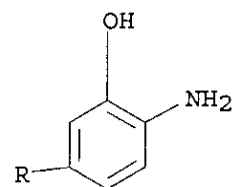
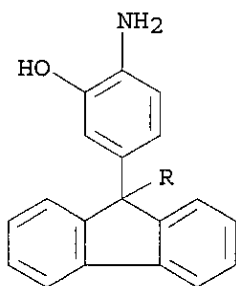
CMF C10 H4 Cl2 O2



CM 2

CRN 152480-72-3

CMF C25 H20 N2 O2

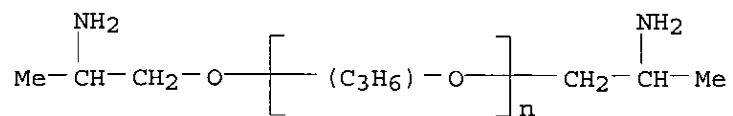


CM 3

CRN 26403-64-5

$$\text{CMF} \quad (\text{C}_3 \text{ H}_6 \text{ O})_n \text{ C}_6 \text{ H}_{16} \text{ N}_2 \text{ O}$$

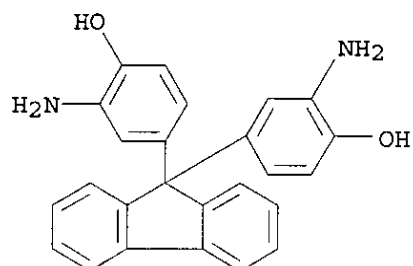
CCI IDS, PMS



CM 4

CRN 20638-07-7

CMF C25 H20 N2 O2



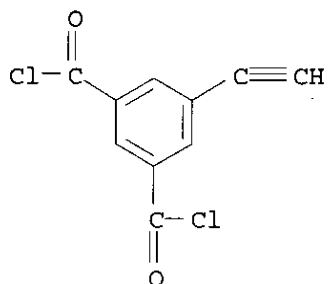
RN 628726-56-7 CAPLUS

CN 2,6-Naphthalenedicarbonyl dichloride, polymer with α -(4-aminobenzoyl)- ω -[(4-aminobenzoyl)oxy]poly[oxy(methyl-1,2-ethanediyl)], 5-ethynyl-1,3-benzenedicarbonyl dichloride, 3,3'-(9H-fluoren-9-ylidene)bis[6-aminophenol] and 4,4'-(9H-fluoren-9-ylidene)bis[2-aminophenol], block (9CI) (CA INDEX NAME)

CM 1

CRN 393543-05-0

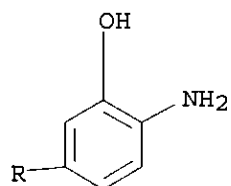
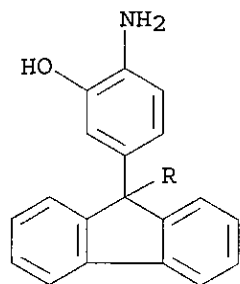
CMF C10 H4 Cl2 O2



CM 2

CRN 152480-72-3

CMF C25 H20 N2 O2

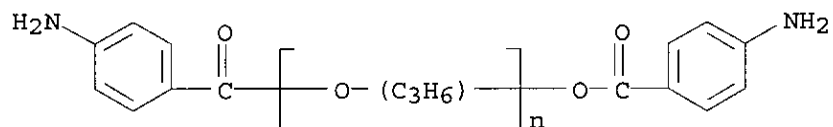


CM 3

CRN 77450-83-0

CMF (C3 H6 O)_n C14 H12 N2 O3

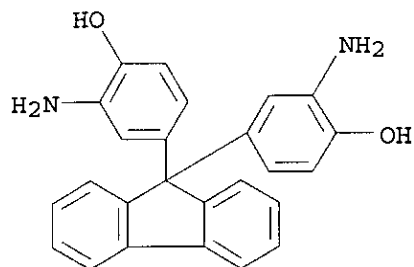
CCI IDS, PMS



CM 4

CRN 20638-07-7

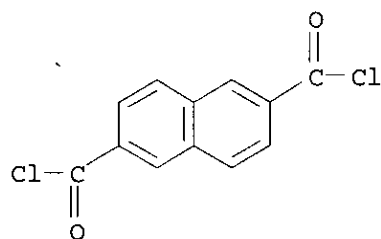
CMF C25 H20 N2 O2



CM 5

CRN 2351-36-2

CMF C12 H6 Cl2 O2



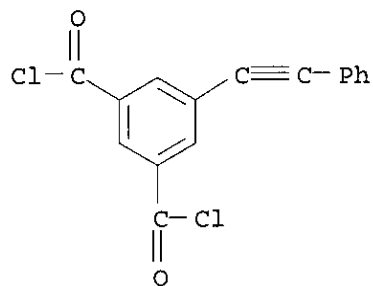
RN 628727-03-7 CAPLUS

CN 1,3-Benzenedicarbonyl dichloride, 5-(phenylethynyl)-, polymer with α -(2-aminopropyl)- ω -(2-aminopropoxy)poly[oxy(methyl-1,2-ethanediyl)], 3,3'-(9H-fluoren-9-ylidene)bis[6-aminophenol] and 4,4'-(9H-fluoren-9-ylidene)bis[2-aminophenol], block (9CI) (CA INDEX NAME)

CM 1

CRN 393543-14-1

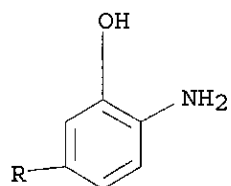
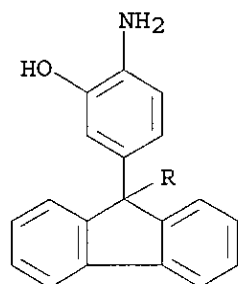
CMF C16 H8 Cl2 O2



CM 2

CRN 152480-72-3

CMF C25 H20 N2 O2

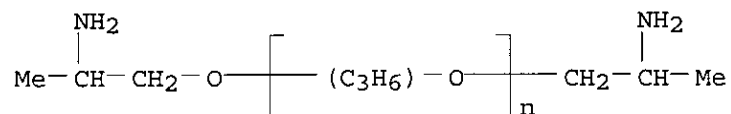


CM 3

CRN 26403-64-5

CMF (C3 H6 O)_n C6 H16 N2 O

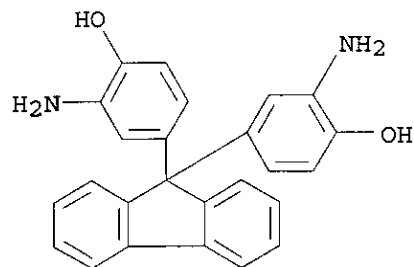
CCI IDS, PMS



CM 4

CRN 20638-07-7

CMF C25 H20 N2 O2



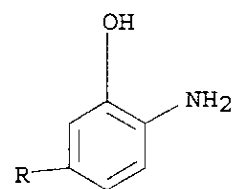
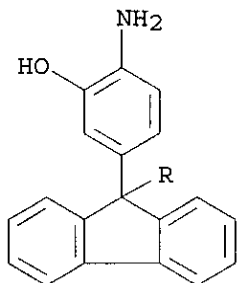
RN 628727-07-1 CAPLUS

CN 2,7-Biphenylenedicarbonyl dichloride, polymer with α -(2-aminopropyl)-
 ω -(2-aminopropoxy)poly[oxy(methyl-1,2-ethanediyl)],
 3,3'-(9H-fluoren-9-ylidene)bis[6-aminophenol] and 4,4'-(9H-fluoren-9-
 ylidene)bis[2-aminophenol], block (9CI) (CA INDEX NAME)

CM 1

CRN 152480-72-3

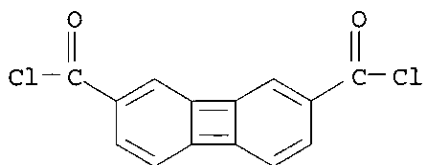
CMF C25 H20 N2 O2



CM 2

CRN 69417-81-8

CMF C14 H6 Cl2 O2

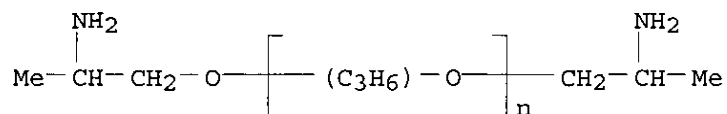


CM 3

CRN 26403-64-5

CMF (C3 H6 O)_n C6 H16 N2 O

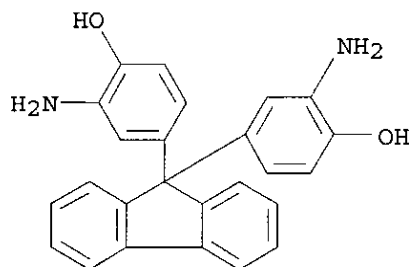
CCI IDS, PMS



CM 4

CRN 20638-07-7

CMF C25 H20 N2 O2



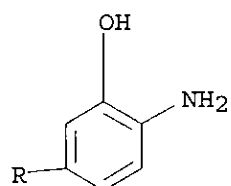
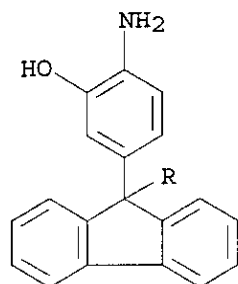
RN 628727-40-2 CAPLUS

CN Benzoyl chloride, 4,4'-(1,2-ethynediyl)bis-, polymer with α -(2-aminopropyl)- ω -(2-aminopropoxy)poly[oxy(methyl-1,2-ethanediyl)], 3,3'-(9H-fluoren-9-ylidene)bis[6-aminophenol] and 4,4'-(9H-fluoren-9-ylidene)bis[2-aminophenol], block (9CI) (CA INDEX NAME)

CM 1

CRN 152480-72-3

CMF C25 H20 N2 O2

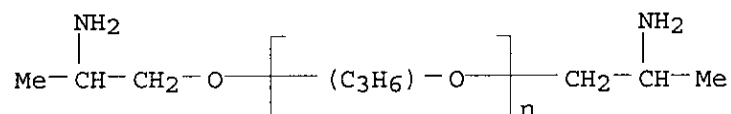


CM 2

CRN 26403-64-5

CMF (C3 H6 O)_n C6 H16 N2 O

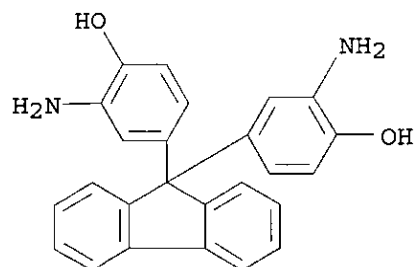
CCI IDS, PMS



CM 3

CRN 20638-07-7

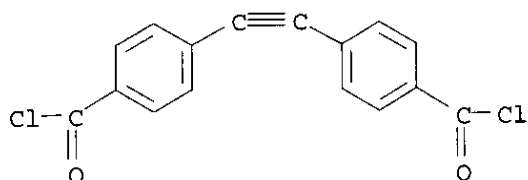
CMF C25 H20 N2 O2



CM 4

CRN 16819-44-6

CMF C16 H8 Cl2 O2



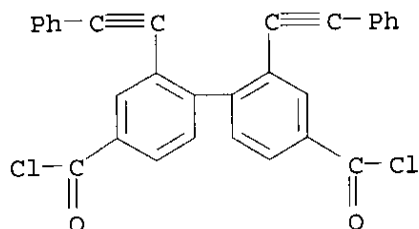
RN 628727-85-5 CAPLUS

CN [1,1'-Biphenyl]-4,4'-dicarbonyl dichloride, 2,2'-bis(phenylethynyl)-, polymer with α -(2-aminopropyl)- ω -(2-aminopropoxy)poly[oxy(methyl-1,2-ethanediyl)], 1,3-benzenedicarbonyl dichloride, 3,3'-(9H-fluoren-9-ylidene)bis[6-aminophenol] and 4,4'-(9H-fluoren-9-ylidene)bis[2-aminophenol] (9CI) (CA INDEX NAME)

CM 1

CRN 393543-08-3

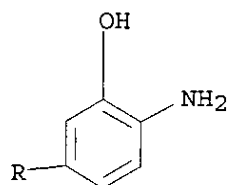
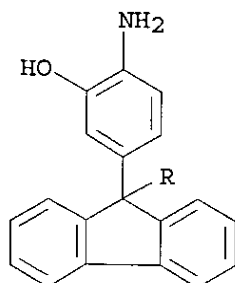
CMF C30 H16 Cl2 O2



CM 2

CRN 152480-72-3

CMF C25 H20 N2 O2

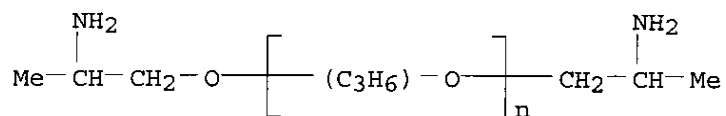


CM 3

CRN 26403-64-5

CMF (C3 H6 O)_n C6 H16 N2 O

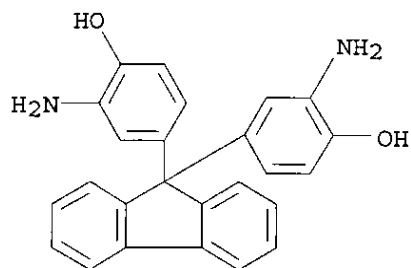
CCI IDS, PMS



CM 4

CRN 20638-07-7

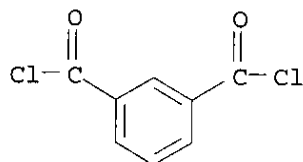
CMF C25 H20 N2 O2



CM 5

CRN 99-63-8

CMF C8 H4 Cl2 O2



- IC ICM C08G069-48
- ICS C08G073-22; C09D005-25; C09D177-06; C09D201-02; H01B003-30
- CC 76-3 (Electric Phenomena)
- Section cross-reference(s): 38
- ST polyamide varnish storage stability insulating film; **heat resistance polybenzoxazole** insulating film semiconductor; water resistance **polybenzoxazole** insulating film semiconductor; **dielec** const **polybenzoxazole** insulating film semiconductor
- IT **Polybenzoxazoles**
 RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (cardo; storage-stable varnishes for **polybenzoxazole**-based **elec.** insulating films in semiconductors)
- IT **Heat-resistant** materials
 Water-resistant materials
 (films; storage-stable varnishes for **polybenzoxazole**-based **elec.** insulating films in semiconductors)
- IT Films
 (**heat-resistant**; storage-stable varnishes for **polybenzoxazole**-based **elec.** insulating films in semiconductors)
- IT Polyesters, reactions
 Polyoxyalkylenes, reactions
 Polyurethanes, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (oligomeric; storage-stable varnishes for **polybenzoxazole**-based **elec.** insulating films in semiconductors)
- IT Cardo polymers
 RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (**polybenzoxazoles**; storage-stable varnishes for **polybenzoxazole**-based **elec.** insulating films in semiconductors)
- IT Polysulfones, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (polyether-, oligomeric; storage-stable varnishes for **polybenzoxazole**-based **elec.** insulating films in semiconductors)

- semiconductors)
- IT Polyethers, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(polysulfone-, oligomeric; storage-stable varnishes for
polybenzoxazole-based elec. insulating films in
semiconductors)
- IT **Polyamides**, uses
RL: IMF (Industrial manufacture); RCT (Reactant); TEM (Technical or
engineered material use); PREP (Preparation); RACT (Reactant or reagent);
USES (Uses)
(reaction **products** with oligomers; storage-stable varnishes
for **polybenzoxazole-based elec.** insulating films in
semiconductors)
- IT **Dielectric** films
Semiconductor devices
(storage-stable varnishes for **polybenzoxazole-based
elec.** insulating films in semiconductors)
- IT **Polybenzoxazoles**
RL: DEV (Device component use); IMF (Industrial manufacture); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(storage-stable varnishes for **polybenzoxazole-based
elec.** insulating films in semiconductors)
- IT Films
(water-resistant; storage-stable varnishes for **polybenzoxazole
-based elec.** insulating films in semiconductors)
- IT 9003-13-8DP, Polypropylene glycol monobutyl ether, aminobenzoate-
terminated, reaction **products** with **polyamides**,
pyrolyzed 9003-53-6DP, Polystyrene, aminobenzoate-terminated, reaction
products with **polyamides**, pyrolyzed 9046-10-0DP,
Polypropylene glycol bis(2-aminopropyl ether), reaction **products**
with **polyamides**, pyrolyzed 106392-12-5DP, Ethylene
oxide-propylene oxide block copolymer, reaction **products** with
polyamides, pyrolyzed
RL: IMF (Industrial manufacture); NUU (Other use, unclassified); PREP
(Preparation); USES (Uses)
(oligomeric; storage-stable varnishes for **polybenzoxazole
-based elec.** insulating films in semiconductors)
- IT 9011-14-7, Poly(methyl methacrylate) 24980-41-4, Polycaprolactone
25014-31-7, Poly(α -methylstyrene) 25248-42-4, Polycaprolactone,
sru
RL: RCT (Reactant); RACT (Reactant or reagent)
(oligomeric; storage-stable varnishes for **polybenzoxazole
-based elec.** insulating films in semiconductors)
- IT **545446-42-2DP**, 9,9-Bis(3-amino-4-hydroxyphenyl)fluorene-9,9-Bis(4-
amino-3-hydroxyphenyl)fluorene-4-ethynyl-2,6-naphthalenedicarboxylic
dichloride copolymer, reaction **products** with
aminobenzoate-terminated styrene oligomers, pyrolyzed **545446-43-3DP**,
3,3'-Diamino-4,4'-dihydroxydiphenyl ether-4,4'-diamino-3,3'-
dihydroxydiphenyl ether-5-ethynylterephthalic dichloride copolymer,
reaction **products** with ethylene oxide-propylene oxide block
oligomer, pyrolyzed **545446-50-2DP**, reaction **products**
with ethylene oxide-propylene oxide block oligomer, pyrolyzed

545446-51-3DP, reaction products with ethylene
oxide-propylene oxide block oligomer, pyrolyzed 628726-00-1P
628726-56-7P 628727-03-7P 628727-07-1P
628727-40-2P 628727-67-3P 628727-85-5P
RL: DEV (Device component use); IMF (Industrial manufacture);
TEM (Technical or engineered material use); PREP (Preparation);
USES (Uses)

(storage-stable varnishes for polybenzoxazole-based
elec. insulating films in semiconductors)

IT 122-04-3DP, 4-Nitrobenzoic acid chloride, reaction products with
hydroxy-terminated styrene oligomers, reduced, reaction products
with polyamides, pyrolyzed
RL: IMF (Industrial manufacture); NUU (Other use, unclassified); PREP
(Preparation); USES (Uses)
(storage-stable varnishes for polybenzoxazole-based
elec. insulating films in semiconductors)

L30 ANSWER 17 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:406535 CAPLUS

DOCUMENT NUMBER: 138:402398

TITLE: New poly(o-hydroxyamides) for use in the
production of polybenzoxazoles for
use in microelectronics

INVENTOR(S): Sezi, Recai

PATENT ASSIGNEE(S): Infineon Technologies AG, Germany

SOURCE: Ger. Offen., 12 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 10145469	A1	20030528	DE 2001-10145469	20010914
US 2003134226	A1	20030717	US 2002-244802	20020916

PRIORITY APPLN. INFO.: DE 2001-10145469 A 20010914

AB The title polyamides, with low dielec. consts.
(preferably <3.0) and weak absorption at <248 nm, have at least some of
their o-OH groups protected by tert-alkoxycarbonyl groups of specified
structure. Adding 40 mmol isophthaloyl chloride in 80 mL butyrolactone
dropwise to 50 mmol 4,4'-(hexafluoroisopropylidene)bis(2-aminophenol)
bis(tert-Bu carbonate) in 250 mL N-methylpyrrolidone stirred at
10°, stirring for 16 h at room temperature, blocking end-groups by addition
of 20 mmol norbornenecarbonyl chloride in 30 mL butyrolactone, stirring
for 3 h, adding 120 mmol pyridine in 50 mL butyrolactone dropwise at room
temperature, and stirring for 2 h gave a protected poly(o-hydroxyamide
) (I). I was deposited as a 25% cyclopentanone solution on a Si chip, dried
for 1 min at 100°, heated at 3°/min under N to 350°,
and held for 1 to give a film with dielec. constant 2.6.

IT 531505-39-2P

RL: IMF (Industrial manufacture); TEM (Technical or engineered

material use); **PREP (Preparation)**; **USES (Uses)**
 (poly(o-hydroxyamides) for production of
polybenzoxazoles for use in microelectronics)

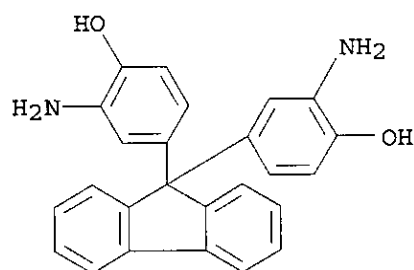
RN 531505-39-2 CAPLUS

CN [1,1'-Biphenyl]-4,4'-dicarbonyl dichloride, polymer with
 4,4'-(9H-fluoren-9-ylidene)bis[2-aminophenol], 4,4'-oxybis[2-aminophenol]
 and 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[benzoyl
 chloride] (9CI) (CA INDEX NAME)

CM 1

CRN 20638-07-7

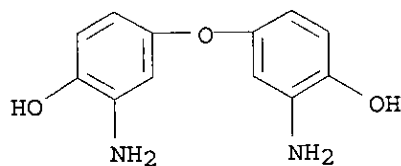
CMF C25 H20 N2 O2



CM 2

CRN 6423-17-2

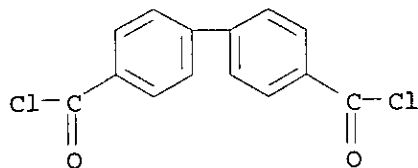
CMF C12 H12 N2 O3



CM 3

CRN 2351-37-3

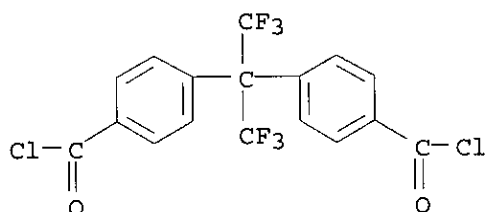
CMF C14 H8 Cl2 O2



CM 4

CRN 1102-92-7

CMF C17 H8 Cl2 F6 O2



- IC ICM C08G073-22
ICS C08G073-10; C09D005-32; C09D005-25; G03F007-38
- CC 35-4 (Chemistry of Synthetic High Polymers)
- ST **polyhydroxyamide** intermediate **polybenzoxazole**;
isophthaloyl chloride **polyhydroxyamide**; diaminobisphenol BOC
blocked **polyhydroxyamide**; blocked diaminobisphenol
polyhydroxyamide prepn
- IT **Polyamides, preparation**
RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(o-hydroxy-, blocked; poly(o-hydroxyamides) for **prodn**
of **polybenzoxazoles** for use in microelectronics)
- IT Microelectronics
(poly(o-hydroxyamides) for **production** of
polybenzoxazoles for use in microelectronics)
- IT **Polybenzoxazoles**
RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(poly(o-hydroxyamides) for **production** of
polybenzoxazoles for use in microelectronics)
- IT 27063-48-5DP, reaction **products** with polyamide-polyester,
optionally cyclized 112492-59-8DP, reaction **products** with
norbornene carbonylchloride, optionally cyclized 512172-71-3DP, cyclized
512172-71-3P 512172-72-4P **531505-39-2P**
RL: IMF (Industrial manufacture); TEM (Technical or engineered
material use); PREP (Preparation); USES (Uses)
(poly(o-hydroxyamides) for **production** of
polybenzoxazoles for use in microelectronics)

IT 129708-71-0P

RL: IMF (Industrial manufacture); PREP (Preparation)

(preparation of blocked diaminobisphenols)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L30 ANSWER 18 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:349523 CAPLUS

DOCUMENT NUMBER: 138:354926

TITLE: **Electrically** insulating films, materials and

coating varnishes for them, and semiconductor devices

INVENTOR(S): Oki, Hiromi; Nakashima, Michio; Hase, Yoko; Izumi, Atsushi

PATENT ASSIGNEE(S): Sumitomo Bakelite Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 25 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003128990	A2	20030508	JP 2001-331959	20011030
PRIORITY APPLN. INFO.:			JP 2001-331959	20011030

AB **Elec.** insulating films, useful as interlayer **dielec.** films for multilayer wiring boards or surface protective layers for semiconductors, have fine pores and comprise resin layers mainly comprising **polybenzoxazole** structures, **prepared** by thermal condensation and crosslinking reactions of materials or varnishes containing film-forming polyamide copolymers **prepared** by reaction of **polyamides** $[\text{NHX}(\text{OH})2\text{NHCOYCO}]_m[\text{NHX}(\text{OH})2\text{NHCOZCO}]_n$ [$\text{R1-R4} = \text{H}$, monovalent organic group; $\text{X} =$ aromatic ring-containing tetravalent group; $\text{Y} =$ divalent group; $\text{Z} =$ divalent group (structures of X , Y , and Z are given); $m > 0$; $n \geq 0$; $2 \leq m + n \leq 1000$; $0.05 \leq m/(m + n) \leq 1$] having branched structures **prepared** from bisaminophenols and polybasic carboxylic acids, with reactive oligomers having substituents reactive towards carboxyl, amino, or OH groups in the polyamide structures. Thus, 2,2-bis(3-amino-4-hydroxyphenyl)hexafluoropropane 35.9, trimesic acid trichloride 0.53, and 4-ethynyl-2,6-naphthalenedicarboxylic acid dichloride 27.7 g were polymerized in N-methyl-2-pyrrolidone (NMP), the reaction mixture was mixed with Et_3N , and stirred with a γ -butyrolactone solution containing 4-aminobenzoate ester-terminated styrene oligomer (M_n 9600; **preparation** given) to give a copolymer containing 37% reactive oligomer units, which was dissolved in NMP, applied on an Al-deposited Si wafer, dried at 120° for 240 s, heated at 300° for 60 min under N to form a film of a **polybenzoxazole** having styrene oligomer units at the terminals, and heated at 400° for 60 min for decomposition of the oligomer units to form a **polybenzoxazole** film having ≤ 15 -nm pores, **dielec.** constant (at 1 MHz) 2.1, **heat resistance** 563° , $T_g > 450^\circ$, and water absorption 0.2%. An electrode

pattern was formed on the **polybenzoxazole** film by vapor deposition of Al.

IT 519142-89-3P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(thermally decomposed, **polybenzoxazole**; elec.

insulating **polybenzoxazole** films having fine pores

prepared by heating of copolymers from branched

polyamides and reactive oligomers for semiconductor devices)

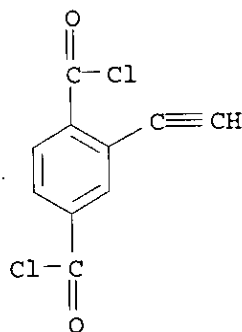
RN 519142-89-3 CAPLUS

CN [1,1'-Biphenyl]-3,3',5,5'-tetracarbonyl tetrachloride, polymer with α -(2-aminopropyl)- ω -(2-aminopropoxy)poly[oxy(methyl-1,2-ethanediyl)], 2-ethynyl-1,4-benzenedicarbonyl dichloride and 3,3'-[9H-fluoren-9-ylidenebis(4,1-phenyleneoxy)]bis[6-aminophenol] (9CI) (CA INDEX NAME)

CM 1

CRN 393543-09-4

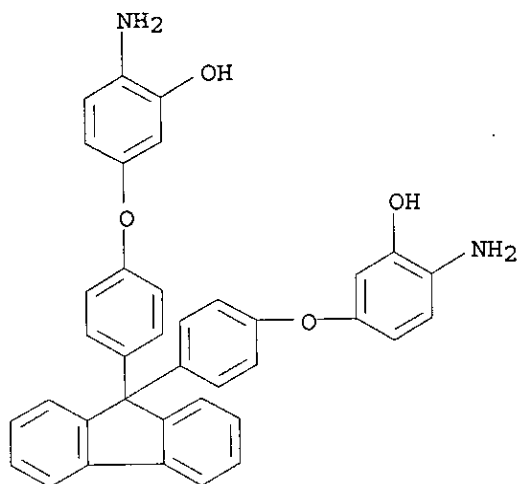
CMF C10 H4 Cl2 O2



CM 2

CRN 359642-31-2

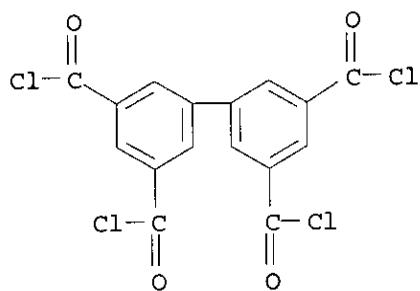
CMF C37 H28 N2 O4



CM 3

CRN 113797-72-1

CMF C16 H6 Cl4 O4

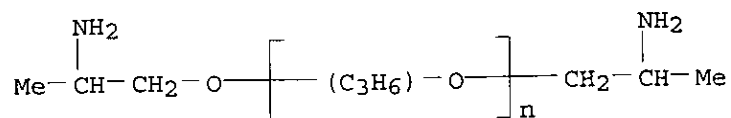


CM 4

CRN 26403-64-5

CMF (C3 H6 O)_n C6 H16 N2 O

CCI IDS, PMS



IC ICM C09D177-00

ICS C08G073-22; C08J009-02; C09D005-25; C09D177-06; C09D179-04;

- H01B003-30; H05K003-28; H05K003-46; C08L079-04
- CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 25, 35, 37, 42, 76
- ST **elec** insulating porous film **polybenzoxazole**
semiconductor; reactive oligomer polyamide **polybenzoxazole**
porous film; aminobenzoate polystyrene polyamide **polybenzoxazole**
porous film; heat water resistance **dielec** coating
polybenzoxazole; multilayer wiring board insulator film
polybenzoxazole
- IT **Electric insulators**
(coatings; **elec.** insulating **polybenzoxazole** films
having fine pores **prepared** by heating of copolymers from
branched **polyamides** and reactive oligomers for semiconductor
devices)
- IT Semiconductor devices
Varnishes
(**elec.** insulating **polybenzoxazole** films having fine
pores **prepared** by heating of copolymers from branched
polyamides and reactive oligomers for semiconductor devices)
- IT **Polybenzoxazoles**
RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(**elec.** insulating **polybenzoxazole** films having fine
pores **prepared** by heating of copolymers from branched
polyamides and reactive oligomers for semiconductor devices)
- IT **Polyamides, preparation**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(fluorine-containing; **elec.** insulating **polybenzoxazole**
films having fine pores **prepared** by heating of copolymers from
branched **polyamides** and reactive oligomers for semiconductor
devices)
- IT **Polybenzoxazoles**
RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(fluorine-containing; **elec.** insulating **polybenzoxazole**
films having fine pores **prepared** by heating of copolymers from
branched **polyamides** and reactive oligomers for semiconductor
devices)
- IT **Dielectric films**
(heat- and water-resistant; **elec.** insulating
polybenzoxazole films having fine pores **prepared** by
heating of copolymers from branched **polyamides** and reactive
oligomers for semiconductor devices)
- IT Water-resistant materials
(heat-resistant, **dielec.** films;
elec. insulating **polybenzoxazole** films having fine
pores **prepared** by heating of copolymers from branched
polyamides and reactive oligomers for semiconductor devices)
- IT Printed circuit boards
(multilayer; **elec.** insulating **polybenzoxazole** films
having fine pores **prepared** by heating of copolymers from

branched **polyamides** and reactive oligomers for semiconductor devices)

IT **Polybenzoxazoles**

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(polyacetylene-, fluorine-containing; **elec.** insulating **polybenzoxazole** films having fine pores **prepared** by heating of copolymers from branched **polyamides** and reactive oligomers for semiconductor devices)

IT **Polyoxyalkylenes, preparation**

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(polyacetylene-polyamide-, fluorine-containing; **elec.** insulating **polybenzoxazole** films having fine pores **prepared** by heating of copolymers from branched **polyamides** and reactive oligomers for semiconductor devices)

IT **Fluoropolymers, preparation**

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(polyacetylene-polyamide-polyoxyalkylene-; **elec.** insulating **polybenzoxazole** films having fine pores **prepared** by heating of copolymers from branched **polyamides** and reactive oligomers for semiconductor devices)

IT **Fluoropolymers, preparation**

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(polyacetylene-**polybenzoxazole**-; **elec.** insulating **polybenzoxazole** films having fine pores **prepared** by heating of copolymers from branched **polyamides** and reactive oligomers for semiconductor devices)

IT **Polyamides, preparation**

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(polyacetylene-polyoxyalkylene-, fluorine-containing; **elec.** insulating **polybenzoxazole** films having fine pores **prepared** by heating of copolymers from branched **polyamides** and reactive oligomers for semiconductor devices)

IT **Fluoropolymers, preparation**

Polyoxyalkylenes, preparation

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(polyamide-; **elec.** insulating **polybenzoxazole** films having fine pores **prepared** by heating of copolymers from branched **polyamides** and reactive oligomers for semiconductor devices)

IT **Polyoxyalkylenes, preparation**

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(polyamide-polyether-, cardo; **elec.** insulating **polybenzoxazole** films having fine pores **prepared** by heating of copolymers from branched **polyamides** and reactive oligomers for semiconductor devices)

- IT Polyoxyalkylenes, **preparation**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(polyamide-polyether-, fluorine-containing; **elec.** insulating **polybenzoxazole** films having fine pores **prepared** by heating of copolymers from branched **polyamides** and reactive oligomers for semiconductor devices)
- IT Polyoxyalkylenes, **preparation**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(polyamide-polyether-; **elec.** insulating **polybenzoxazole** films having fine pores **prepared** by heating of copolymers from branched **polyamides** and reactive oligomers for semiconductor devices)
- IT Cardo polymers
Fluoropolymers, **preparation**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(polyamide-polyether-polyoxyalkylene-; **elec.** insulating **polybenzoxazole** films having fine pores **prepared** by heating of copolymers from branched **polyamides** and reactive oligomers for semiconductor devices)
- IT Polyethers, **preparation**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(polyamide-polyoxyalkylene, fluorine-containing; **elec.** insulating **polybenzoxazole** films having fine pores **prepared** by heating of copolymers from branched **polyamides** and reactive oligomers for semiconductor devices)
- IT Polyethers, **preparation**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(polyamide-polyoxyalkylene-, cardo; **elec.** insulating **polybenzoxazole** films having fine pores **prepared** by heating of copolymers from branched **polyamides** and reactive oligomers for semiconductor devices)
- IT Polyacetylenes, **preparation**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(polyamide-polyoxyalkylene-, fluorine-containing; **elec.** insulating **polybenzoxazole** films having fine pores **prepared** by heating of copolymers from branched **polyamides** and reactive oligomers for semiconductor devices)
- IT Polyethers, **preparation**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(polyamide-polyoxyalkylene-; **elec.** insulating **polybenzoxazole** films having fine pores **prepared** by heating of copolymers from branched **polyamides** and reactive oligomers for semiconductor devices)
- IT Polyethers, **uses**
RL: IMF (Industrial manufacture); TEM (Technical or engineered material)

- use); PREP (Preparation); USES (Uses)
 (polybenzoxazole-, cardo; **elec.** insulating
 polybenzoxazole films having fine pores prepared by
 heating of copolymers from branched polyamides and reactive
 oligomers for semiconductor devices)
- IT Polyacetylenes, preparation
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
 (Reactant or reagent)
 (polybenzoxazole-, fluorine-containing; **elec.**
 insulating polybenzoxazole films having fine pores
 prepared by heating of copolymers from branched
 polyamides and reactive oligomers for semiconductor devices)
- IT Polyethers, uses
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material
 use); PREP (Preparation); USES (Uses)
 (polybenzoxazole-, fluorine-containing; **elec.**
 insulating polybenzoxazole films having fine pores
 prepared by heating of copolymers from branched
 polyamides and reactive oligomers for semiconductor devices)
- IT Fluoropolymers, uses
 Polyethers, uses
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material
 use); PREP (Preparation); USES (Uses)
 (polybenzoxazole-; **elec.** insulating
 polybenzoxazole films having fine pores prepared by
 heating of copolymers from branched polyamides and reactive
 oligomers for semiconductor devices)
- IT Cardo polymers
 Fluoropolymers, uses
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material
 use); PREP (Preparation); USES (Uses)
 (polybenzoxazole-polyether-; **elec.** insulating
 polybenzoxazole films having fine pores prepared by
 heating of copolymers from branched polyamides and reactive
 oligomers for semiconductor devices)
- IT Polybenzoxazoles
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material
 use); PREP (Preparation); USES (Uses)
 (polyether-, cardo; **elec.** insulating polybenzoxazole
 films having fine pores prepared by heating of copolymers from
 branched polyamides and reactive oligomers for semiconductor
 devices)
- IT Polybenzoxazoles
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material
 use); PREP (Preparation); USES (Uses)
 (polyether-, fluorine-containing; **elec.** insulating
 polybenzoxazole films having fine pores prepared by
 heating of copolymers from branched polyamides and reactive
 oligomers for semiconductor devices)
- IT Polybenzoxazoles
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material
 use); PREP (Preparation); USES (Uses)

(polyether-; **elec.** insulating **polybenzoxazole** films having fine pores **prepared** by heating of copolymers from branched **polyamides** and reactive oligomers for semiconductor devices)

IT **Polyamides, preparation**

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(polyether-polyoxyalkylene-, cardo; **elec.** insulating **polybenzoxazole** films having fine pores **prepared** by heating of copolymers from branched **polyamides** and reactive oligomers for semiconductor devices)

IT **Polyamides, preparation**

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(polyether-polyoxyalkylene-, fluorine-containing; **elec.** insulating **polybenzoxazole** films having fine pores **prepared** by heating of copolymers from branched **polyamides** and reactive oligomers for semiconductor devices)

IT **Polyamides, preparation**

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(polyether-polyoxyalkylene-; **elec.** insulating **polybenzoxazole** films having fine pores **prepared** by heating of copolymers from branched **polyamides** and reactive oligomers for semiconductor devices)

IT **Polyamides, preparation**

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(polyoxyalkylene-; **elec.** insulating **polybenzoxazole** films having fine pores **prepared** by heating of copolymers from branched **polyamides** and reactive oligomers for semiconductor devices)

IT **Heat-resistant materials**

(water-resistant, **dielec.** films; **elec.** insulating **polybenzoxazole** films having fine pores **prepared** by heating of copolymers from branched **polyamides** and reactive oligomers for semiconductor devices)

IT 3034-86-4P, Methyl 4-ethynylbenzoate 16819-43-5P, 4,4'-Tolandicarboxylic acid 16882-08-9P 23351-91-9P, 5-Bromoisophthalic acid 51760-21-5P, Dimethyl 5-bromoisophthalate 168619-21-4P 217655-36-2P, 1-[3,5-Bis(methoxycarbonyl)phenyl]-2-phenylethyne 393543-03-8P, 4-[3,5-Bis(methoxycarbonyl)phenyl]-2-methyl-3-butyn-1-ol 393543-04-9P, 5-Ethynylisophthalic acid dipotassium salt

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(**elec.** insulating **polybenzoxazole** films having fine pores **prepared** by heating of copolymers from branched **polyamides** and reactive oligomers for semiconductor devices)

IT 99-31-0, 5-Aminoisophthalic acid 115-19-5, 3-Methyl-1-butyn-3-ol

122-04-3, 4-Nitrobenzoic acid chloride 358-23-6,

Trifluoromethanesulfonic acid anhydride 619-42-1, Methyl 4-bromobenzoate 13036-02-7, Dimethyl 5-hydroxyisophthalate 62480-31-3

RL: RCT (Reactant); RACT (Reactant or reagent)

(elec. insulating **polybenzoxazole** films having fine pores **prepared** by heating of copolymers from branched **polyamides** and reactive oligomers for semiconductor devices)

IT 16819-44-6P, 4,4'-Tolandicarboxylic acid dichloride 393543-05-0P
393543-14-1P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(monomer; elec. insulating **polybenzoxazole** films having fine pores **prepared** by heating of copolymers from branched **polyamides** and reactive oligomers for semiconductor devices)

IT 75-21-8DP, Ethylene oxide, reaction **products** with styrene oligomer, aminobenzoate ester, reaction **products** with **polyamides** 150-13-0DP, 4-Aminobenzoic acid, ester with hydroxy-terminated styrene oligomer, reaction **products** with **polyamides** 9003-53-6DP, Polystyrene, aminobenzoate-terminated, reaction **products** with **polyamides** 519142-88-2DP, reaction **products** with aminobenzoate-terminated styrene oligomer 519142-89-3P 519142-90-6P 519142-91-7P 519142-93-9P 519142-94-0P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(thermally decomposed, **polybenzoxazole**; elec. insulating **polybenzoxazole** films having fine pores **prepared** by heating of copolymers from branched **polyamides** and reactive oligomers for semiconductor devices)

L30 ANSWER 19 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:298646 CAPLUS

DOCUMENT NUMBER: 138:328986

TITLE: High-temperature-resistant deep-UV-sensitive photoresist composition for forming **dielectric** or buffer layer in microelectronics

INVENTOR(S): Recai, Sezi

PATENT ASSIGNEE(S): Infineon Technologies AG, Germany

SOURCE: Ger. Offen., 16 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 10145472	A1	20030417	DE 2001-10145472	20010914
US 2003087190	A1	20030508	US 2002-244280	20020916

PRIORITY APPLN. INFO.: DE 2001-10145472 A 20010914

AB The title photoresist composition comprises a poly-o-**hydroxyamide** with tert-butoxycarbonyl groups -COOCR₃R₄R₅ (R₃-5 = -H, -F, -(CH₂)_nCH₃, -(CF₂)_nCF₃; n = 0-10) as protective groups, a photoacid, and mixed solvents. The photoresist composition shows high photosensitivity to 248 nm

light exposure compared to a conventional photoresist composition without the above protective groups. After the cyclization conversion of poly-o-hydroxyamide into polybenzoxazole, the new photoresist composition shows surprisingly a smaller dielec. constant than the conventional photoresist composition without the protective groups.

IT 512172-70-2P

RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(in high-temperature-resistant photoresist composition for forming dielec. or buffer layer in microelectronics)

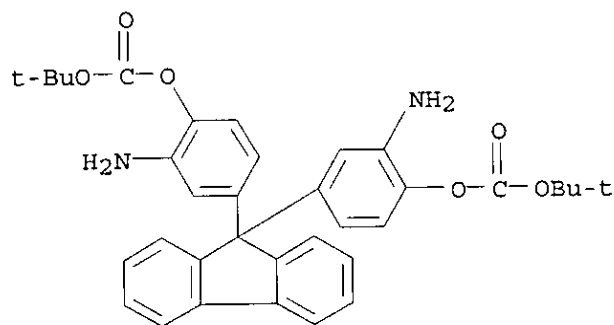
RN 512172-70-2 CAPLUS

CN Carbonic acid, 9H-fluoren-9-ylidenebis(2-amino-4,1-phenylene) bis(1,1-dimethylethyl) ester, polymer with [1,1'-biphenyl]-4,4'-dicarbonyl dichloride, oxybis(2-amino-4,1-phenylene) bis[(1,1-dimethylethyl) carbonate] and 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[benzoyl chloride] (9CI) (CA INDEX NAME)

CM 1

CRN 512172-69-9

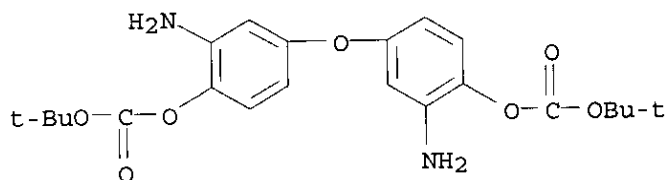
CMF C35 H36 N2 O6



CM 2

CRN 512172-68-8

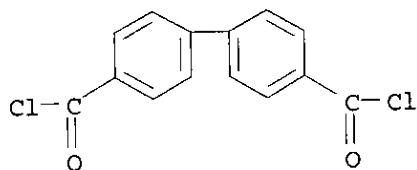
CMF C22 H28 N2 O7



CM 3

CRN 2351-37-3

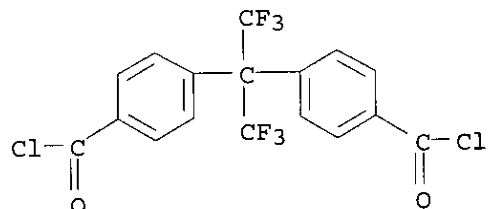
CMF C14 H8 Cl2 O2



CM 4

CRN 1102-92-7

CMF C17 H8 Cl2 F6 O2



IC ICM G03F007-038

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 38, 76

ST photoresist compn poly ortho **hydroxyamide** deep UV
microelectronic **polybenzoxazole**

IT Photoresists

(UV; high-temperature-resistant photoresist composition for forming **dielec**
or buffer layer in microelectronics)

IT **Polybenzoxazoles**

RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)

(acrylic; in high-temperature-resistant photoresist composition for forming **dielec**. or buffer layer in microelectronics)

IT **Polybenzoxazoles**

RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)

(cardo, fluorine-containing; **polybenzoxazole** in high-temperature-resistant photoresist composition for forming **dielec**. or buffer layer in microelectronics)

IT **Electric insulators**

Heat-resistant materials

Microelectronic devices

(high-temperature-resistant photoresist composition for forming dielec.
or buffer layer in microelectronics)

IT Polyesters, processes

RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)

(polyamide-, fluorine-containing; poly-o-hydroxyamide in
high-temperature-resistant photoresist composition for forming dielec.
or buffer layer in microelectronics)

IT Fluoropolymers, processes

RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)

(polyamide-polyester-; poly-o-hydroxyamide in
high-temperature-resistant photoresist composition for forming dielec.
or buffer layer in microelectronics)

IT Polyethers, processes

RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)

(polybenzoxazole-, cardo; polybenzoxazole in
high-temperature-resistant photoresist composition for forming dielec.
or buffer layer in microelectronics)

IT Polyethers, processes

RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)

(polybenzoxazole-, fluorine-containing; polybenzoxazole
in high-temperature-resistant photoresist composition for forming dielec
or buffer layer in microelectronics)

IT Cardo polymers

Fluoropolymers, processes

RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)

(polybenzoxazole-polyether-; polybenzoxazole in
high-temperature-resistant photoresist composition for forming dielec.
or buffer layer in microelectronics)

IT Cardo polymers

RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)

(polybenzoxazoles, fluorine-containing; polybenzoxazole
in high-temperature-resistant photoresist composition for forming dielec
or buffer layer in microelectronics)

IT Polyamides, processes

RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)

(polyester-, fluorine-containing; poly-o-hydroxyamide in

high-temperature-resistant photoresist composition for forming **dielec.** or buffer layer in microelectronics)

IT **Polybenzoxazoles**

RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)

(polyether-, cardo; **polybenzoxazole** in high-temperature-resistant photoresist composition for forming **dielec.** or buffer layer in microelectronics)

IT **Polybenzoxazoles**

RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)

(polyether-, fluorine-containing; **polybenzoxazole** in high-temperature-resistant photoresist composition for forming **dielec.** or buffer layer in microelectronics)

IT 108-31-6DP, Maleic acid anhydride, reaction **products** with fluorine-containing **polybenzoxazole**-polyethers 72123-18-3P

512172-70-2P 512172-71-3DP, reaction **products** with maleic acid anhydride 512172-72-4P 512172-73-5P

RL: CPS (Chemical process); **IMF (Industrial manufacture)**; PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); **PREP (Preparation)**; PROC (Process); USES (Uses)

(in high-temperature-resistant photoresist composition for forming **dielec.** or buffer layer in microelectronics)

IT 1886-74-4 4450-68-4 41580-58-9 57840-38-7, Triphenylsulfonium hexafluoroantimonate 84563-54-2

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(photoacid in high-temperature-resistant photoresist composition for forming **dielec.** or buffer layer in microelectronics)

IT 920-46-7DP, Methacrylic acid chloride, reaction **products** acrylic **polybenzoxazoles** 27063-48-5DP, reaction **products** with

fluorine-containing polyester-**polyamides** 512172-64-4DP, norbornenecarboxylic acid terminated 512172-65-5P 512172-67-7DP, methacrylic acid terminated

RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)

(poly-o-**hydroxyamide** in high-temperature-resistant photoresist composition for forming **dielec.** or buffer layer in microelectronics)

L30 ANSWER 20 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:298645 CAPLUS

DOCUMENT NUMBER: 138:328985

TITLE: High-temperature-resistant photoresist composition for forming **dielectric** or buffer layer in microelectronics

INVENTOR(S): Sezi, Recai

PATENT ASSIGNEE(S): Infineon Technologies AG, Germany

SOURCE: Ger. Offen., 18 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 10145471	A1	20030417	DE 2001-10145471	20010914
US 2003099904	A1	20030529	US 2002-244257	20020916
PRIORITY APPLN. INFO.:			DE 2001-10145471 A	20010914

AB The title photoresist composition comprises a poly-o-**hydroxyamide** with free hydroxy groups, a dissoln. inhibitor, a photoacid, and a polar solvent. The photoresist composition shows high photosensitivity compared to a conventional quinone azide based photoresist composition After the cyclization conversion of poly-o-**hydroxyamide** into **polybenzoxazole**, the new photoresist composition shows surprisingly a smaller **dielec** constant than the conventional quinone azide based photoresist composition

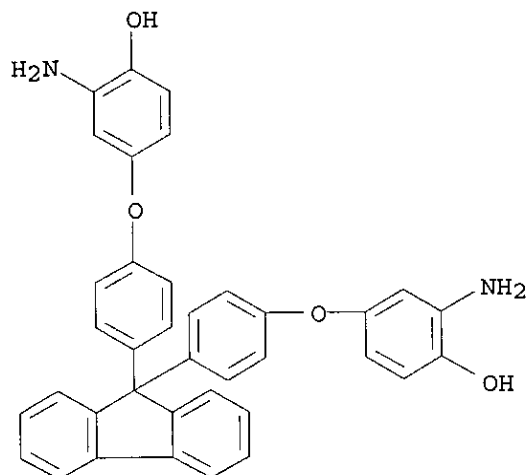
IT **512173-67-0P 512173-69-2DP**, benzoic chloride terminated
 RL: CPS (Chemical process); **IMF (Industrial manufacture)**; PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); **PREP (Preparation)**; PROC (Process); USES (Uses)
 (polybenzoxazole in high-temperature-resistant photoresist composition for forming **dielec.** or buffer layer in microelectronics)

RN 512173-67-0 CAPLUS

CN [1,1'-Biphenyl]-4,4'-dicarbonyl dichloride, polymer with 1,3-benzenedicarbonyl dichloride, 4,6-diamino-1,3-benzenediol and 4,4'-[9H-fluoren-9-ylidenebis(4,1-phenyleneoxy)]bis[2-aminophenol] (9CI)
 (CA INDEX NAME)

CM 1

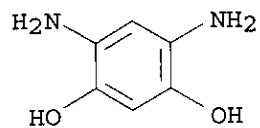
CRN 512173-66-9
 CMF C37 H28 N2 O4



CM 2

CRN 15791-87-4

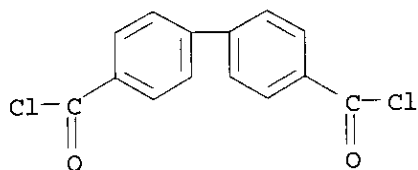
CMF C6 H8 N2 O2



CM 3

CRN 2351-37-3

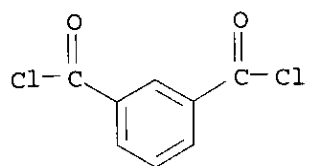
CMF C14 H8 Cl2 O2



CM 4

CRN 99-63-8

CMF C8 H4 Cl2 O2



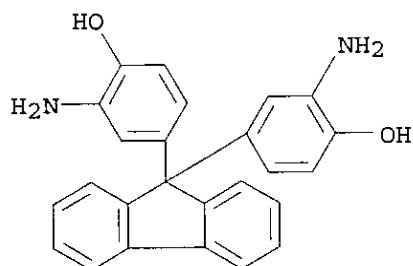
RN 512173-69-2 CAPLUS

CN 1,3-Benzenedicarbonyl dichloride, polymer with 4,4'-(9H-fluoren-9-ylidene)bis[2-aminophenol] and 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[benzoyl chloride] (9CI) (CA INDEX NAME)

CM 1

CRN 20638-07-7

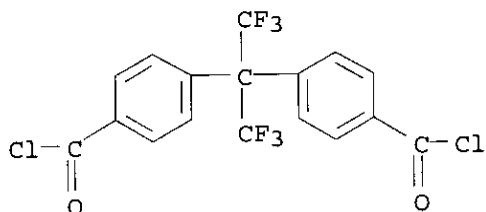
CMF C25 H20 N2 O2



CM 2

CRN 1102-92-7

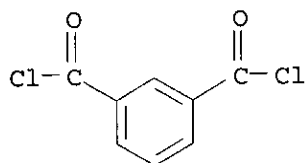
CMF C17 H8 Cl2 F6 O2



CM 3

CRN 99-63-8

CMF C8 H4 Cl2 O2



- IC ICM G03F007-038
- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38, 76
- ST photoresist compn poly ortho **hydroxyamide dielec**
buffer microelectronic **polybenzoxazole**
- IT **Polybenzoxazoles**
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(acrylic; in high-temperature-resistant photoresist composition for forming **dielec.** or buffer layer in microelectronics)
- IT **Polybenzoxazoles**
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(cardo, fluorine-containing; **polybenzoxazole** in high-temperature-resistant photoresist composition for forming **dielec.** or buffer layer in microelectronics)
- IT **Electric insulators**
Heat-resistant materials
Microelectronic devices
Photoresists
(high-temperature-resistant photoresist composition for forming **dielec.** or buffer layer in microelectronics)
- IT Polyvinyl butyrals
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(in high-temperature-resistant photoresist composition for forming **dielec.** or buffer layer in microelectronics)
- IT Polyesters, processes
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(polyamide-, fluorine-containing; poly-o-**hydroxyamide** in high-temperature-resistant photoresist composition for forming **dielec.** or buffer layer in microelectronics)
- IT Fluoropolymers, processes
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(polyamide-polyester-; poly-o-**hydroxyamide** in high-temperature-resistant photoresist composition for forming **dielec.** or buffer layer in microelectronics)

- IT Polyethers, processes
 RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
 (polybenzoxazole-, cardo; **polybenzoxazole** in high-temperature-resistant photoresist composition for forming dielec. or buffer layer in microelectronics)
- IT Polyethers, processes
 RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
 (polybenzoxazole-, fluorine-containing; **polybenzoxazole** in high-temperature-resistant photoresist composition for forming dielec. or buffer layer in microelectronics)
- IT Cardo polymers
 Fluoropolymers, processes
 RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
 (polybenzoxazole-polyether-; **polybenzoxazole** in high-temperature-resistant photoresist composition for forming dielec. or buffer layer in microelectronics)
- IT Cardo polymers
 RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
 (polybenzoxazoles, fluorine-containing; **polybenzoxazole** in high-temperature-resistant photoresist composition for forming dielec. or buffer layer in microelectronics)
- IT Polyamides, processes
 RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
 (polyester-, fluorine-containing; poly-o-hydroxyamide in high-temperature-resistant photoresist composition for forming dielec. or buffer layer in microelectronics)
- IT Polybenzoxazoles
 RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
 (polyether-, cardo; **polybenzoxazole** in high-temperature-resistant photoresist composition for forming dielec. or buffer layer in microelectronics)
- IT Polybenzoxazoles
 RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
 (polyether-, fluorine-containing; **polybenzoxazole** in high-temperature-resistant photoresist composition for forming dielec. or buffer layer in microelectronics)
- IT 774-65-2 1886-74-4 4450-68-4 5551-72-4 35343-63-6, tert-Butyl methacrylate-methacrylic acid copolymer 41580-58-9 57840-38-7,

Triphenylsulfonium hexafluoroantimonate 84563-54-2 87188-51-0,
p-tert-Butoxycarbonyloxystyrene 145531-11-9 380848-50-0 512173-70-5
RL: CPS (Chemical process); PEP (Physical, engineering or chemical
process); TEM (Technical or engineered material use); PROC (Process); USES
(Uses)

(in high-temperature-resistant photoresist composition for forming dielec
. or buffer layer in microelectronics)

IT 27063-48-5DP, reaction **products** with fluorine-containing polyester-
polyamides 112492-59-8DP, norbornenecarboxylic acid terminated
512173-65-8P

RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical,
engineering or chemical process); TEM (Technical or engineered material
use); PREP (Preparation); PROC (Process); USES (Uses)

(poly-o-hydroxyamide in high-temperature-resistant photoresist
composition for forming dielec. or buffer layer in
microelectronics)

IT 98-88-4DP, Benzoic acid chloride, reaction **products** with
fluorine-containing cardo **polybenzoxazoles** 108-31-6DP, Maleic acid
anhydride, reaction **products** with fluorine-containing
polybenzoxazole-polyethers 920-46-7DP, Methacrylic acid
chloride, reaction **products** with acrylic **polybenzoxazole**
512172-72-4DP, methacrylic acid terminated 512173-67-0P
512173-68-1DP, reaction **products** with maleic anhydride
512173-69-2DP, benzoic chloride terminated

RL: CPS (Chemical process); IMF (Industrial manufacture); PEP
(Physical, engineering or chemical process); TEM (Technical or engineered
material use); PREP (Preparation); PROC (Process); USES (Uses)

(polybenzoxazole in high-temperature-resistant photoresist composition
for forming dielec. or buffer layer in microelectronics)

IT 56-55-3, 1,2-Benzanthracene 120-12-7, Anthracene, processes 198-55-0,
Perylene

RL: CPS (Chemical process); PEP (Physical, engineering or chemical
process); TEM (Technical or engineered material use); PROC (Process); USES
(Uses)

(sensitizer in high-temperature-resistant photoresist composition for
forming
dielec. or buffer layer in microelectronics)

L30 ANSWER 21 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:274807 CAPLUS

DOCUMENT NUMBER: 138:288731

TITLE: **Polybenzoxazole** precursors, their condensed
crosslinked **polybenzoxazoles**, insulating
films, and semiconductor devices

INVENTOR(S): Ishida, Yuichi; Enoki, Naoshi

PATENT ASSIGNEE(S): Sumitomo Bakelite Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 14 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003105086	A2	20030409	JP 2001-302665	20010928
PRIORITY APPLN. INFO.:			JP 2001-302665	20010928

AB The **polybenzoxazole** precursors comprise
 [HNX(OH)2NHCOYCO]_m[HNX(OH)2NHCOZCO]_n [X = (substituted) tetravalent
 benzene derivative group; Y = (substituted) naphthylethynyl-containing divalent
 benzene derivative; Z = (substituted) benzene derivative or cyclohexane
 derivative; m

>0; n ≥ 0; (m + n) = 2-1000; m/(m + n) = 0.05-1]. Thus, polymerization of
 3,3'-diamino-4,4'-dihydroxybiphenyl and 5-(1-naphthylethynyl)isophthalic
 acid dichloride gave a copolymer with Mn 7000, which was dissolved in
 N-methyl-2-pyrrolidone, applied on a glass plate, and baked to give a
 crosslinked **polybenzoxazole** film with dielec. constant
 3.15, Tg >450°, and 5% weight loss temperature 524°.

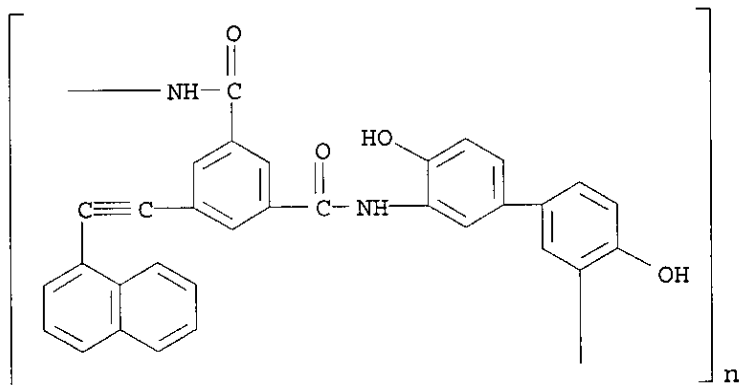
IT 505059-41-6P 505059-50-7P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP
 (Preparation); RACT (Reactant or reagent)

(polybenzoxazole precursors and their condensed crosslinked
 polybenzoxazoles for insulating films with good heat
 resistance)

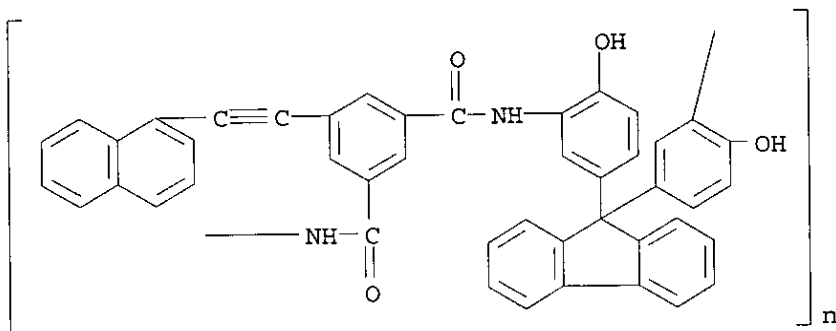
RN 505059-41-6 CAPLUS

CN Poly[iminocarbonyl[5-(1-naphthalenylethynyl)-1,3-
 phenylene]carbonylimino(4,4'-dihydroxy[1,1'-biphenyl]-3,3'-diyl)] (9CI)
 (CA INDEX NAME)



RN 505059-50-7 CAPLUS

CN Poly[iminocarbonyl[5-(1-naphthalenylethynyl)-1,3-phenylene]carbonylimino(6-
 hydroxy-1,3-phenylene)-9H-fluoren-9-ylidene(4-hydroxy-1,3-phenylene)]
 (9CI) (CA INDEX NAME)



IT 505059-40-5P 505059-49-4P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polybenzoxazole precursors and their condensed crosslinked polybenzoxazoles for insulating films with good heat resistance)

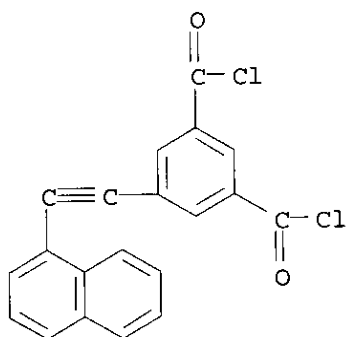
RN 505059-40-5 CAPLUS

CN 1,3-Benzenedicarbonyl dichloride, 5-(1-naphthalenylethynyl)-, polymer with 3,3'-diamino[1,1'-biphenyl]-4,4'-diol (9CI) (CA INDEX NAME)

CM 1

CRN 505059-39-2

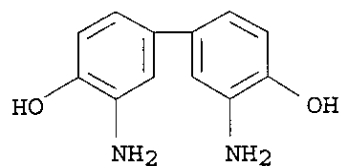
CMF C20 H10 Cl2 O2



CM 2

CRN 4194-40-5

CMF C12 H12 N2 O2



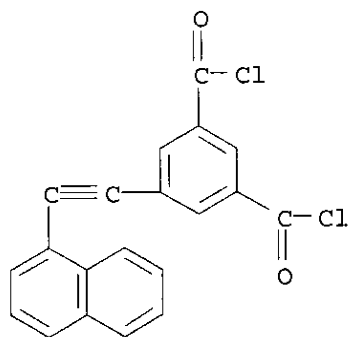
RN 505059-49-4 CAPLUS

CN 1,3-Benzenedicarbonyl dichloride, 5-(1-naphthalenylethynyl)-, polymer with 4,4'-(9H-fluoren-9-ylidene)bis[2-aminophenol] (9CI) (CA INDEX NAME)

CM 1

CRN 505059-39-2

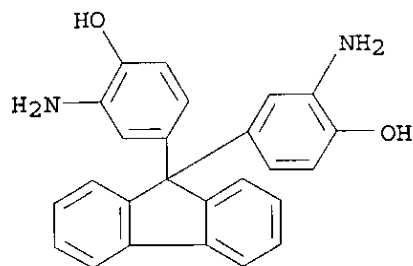
CMF C20 H10 Cl2 O2



CM 2

CRN 20638-07-7

CMF C25 H20 N2 O2



IC ICM C08G073-22

ICS C08J005-18; H01L021-312; C08L079-04

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 76

- ST **polybenzoxazole** precursor polyamide insulating film
semiconductor crosslinking; aminohydroxybiphenyl naphthylethynyl
isophthaloyl chloride **polybenzoxazole** heat
resistance
- IT **Polybenzoxazoles**
RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(cardo, crosslinked; **polybenzoxazole** precursors and their
condensed crosslinked **polybenzoxazoles** for insulating films
with good heat resistance)
- IT **Polyamides, preparation**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(cardo; **polybenzoxazole** precursors and their condensed
crosslinked **polybenzoxazoles** for insulating films with good
heat resistance)
- IT **Polybenzoxazoles**
RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(crosslinked; **polybenzoxazole** precursors and their condensed
crosslinked **polybenzoxazoles** for insulating films with good
heat resistance)
- IT **Heat-resistant materials**
(films; **polybenzoxazole** precursors and their condensed
crosslinked **polybenzoxazoles** for insulating films with good
heat resistance)
- IT **Polybenzoxazoles**
RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(fluorine-containing, crosslinked; **polybenzoxazole** precursors and
their condensed crosslinked **polybenzoxazoles** for insulating
films with good heat resistance)
- IT **Polyamides, preparation**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(fluorine-containing; **polybenzoxazole** precursors and their
condensed crosslinked **polybenzoxazoles** for insulating films
with good heat resistance)
- IT **Films**
(heat-resistant; **polybenzoxazole**
precursors and their condensed crosslinked **polybenzoxazoles**
for insulating films with good heat resistance)
- IT **Fluoropolymers, preparation**
Polyethers, preparation
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(polyamide-; **polybenzoxazole** precursors and their condensed
crosslinked **polybenzoxazoles** for insulating films with good
heat resistance)
- IT **Cardo polymers**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT

- (Reactant or reagent)
(polyamides; polybenzoxazole precursors and their condensed crosslinked polybenzoxazoles for insulating films with good heat resistance)
- IT Dielectric films
Semiconductor devices
(polybenzoxazole precursors and their condensed crosslinked polybenzoxazoles for insulating films with good heat resistance)
- IT Polyamides, preparation
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(polybenzoxazole precursors and their condensed crosslinked polybenzoxazoles for insulating films with good heat resistance)
- IT Fluoropolymers, uses
Polyethers, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polybenzoxazole-, crosslinked; polybenzoxazole precursors and their condensed crosslinked polybenzoxazoles for insulating films with good heat resistance)
- IT Cardo polymers
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polybenzoxazoles, crosslinked; polybenzoxazole precursors and their condensed crosslinked polybenzoxazoles for insulating films with good heat resistance)
- IT Polybenzoxazoles
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-, crosslinked; polybenzoxazole precursors and their condensed crosslinked polybenzoxazoles for insulating films with good heat resistance)
- IT Polyamides, preparation
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(polyether-; polybenzoxazole precursors and their condensed crosslinked polybenzoxazoles for insulating films with good heat resistance)
- IT 505059-42-7P 505059-45-0P 505059-48-3P 505059-51-8P 505059-52-9P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(crosslinked; polybenzoxazole precursors and their condensed crosslinked polybenzoxazoles for insulating films with good heat resistance)
- IT 505059-41-6P 505059-44-9P 505059-47-2P 505059-50-7P
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(polybenzoxazole precursors and their condensed crosslinked polybenzoxazoles for insulating films with good heat resistance)

IT 505059-40-5P 505059-43-8P 505059-46-1P 505059-49-4P
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (polybenzoxazole precursors and their condensed crosslinked polybenzoxazoles for insulating films with good heat resistance)

L30 ANSWER 22 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2003:271760 CAPLUS
 DOCUMENT NUMBER: 138:288676
 TITLE: Polybenzoxazole precursors and their condensate organic insulating films with good heat resistance
 INVENTOR(S): Hase, Yoko
 PATENT ASSIGNEE(S): Sumitomo Bakelite Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003105085	A2	20030409	JP 2001-298562	20010927
PRIORITY APPLN. INFO.:			JP 2001-298562	20010927

AB The films, useful for semiconductor devices, etc., are **manufactured** by condensation of **polybenzoxazole** precursors (CONHX(OH)2NHC(O)Y)n [X = substituted tetravalent benzene derivative group; Y = (substituted) divalent benzene derivative; n = 2-1000] **prepared** from bulky diaminophenols X(NH)2(OH)2 and bulky dicarboxylic acids Y(CO2H)2 (X, Y = same as the above). Thus, polymerization of 9,9-bis-[2-methyl-5-cyclohexyl-4-[(4-amino-3-hydroxy)phenoxy]phenyl]fluorene and 5-tert-butylisophthalic acid dichloride gave a copolymer with Mn 7.0 + 103 and Mw 1.36 + 104, which was dissolved in N-methyl-2-pyrrolidone, applied on a silicon wafer, dried, and baked to give a **polybenzoxazole** film with d. 1.17 g/cm³, dielec. constant 2.64, and 5% weight loss temperature 469°.

IT 505072-96-8P
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (polybenzoxazole precursors and their condensate organic insulating films with good heat resistance)
 RN 505072-96-8 CAPLUS
 CN Poly[oxy(2-cyclohexyl-5-methyl-1,4-phenylene)-9H-fluoren-9-ylidene(5-cyclohexyl-2-methyl-1,4-phenylene)oxy(3-hydroxy-1,4-phenylene)iminocarbonyl[5-(1,1-dimethylethyl)-1,3-phenylene]carbonylimino(2-hydroxy-1,4-phenylene)] (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

IT 505072-95-7P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polybenzoxazole precursors and their condensate organic insulating films with good heat resistance)

RN 505072-95-7 CAPLUS

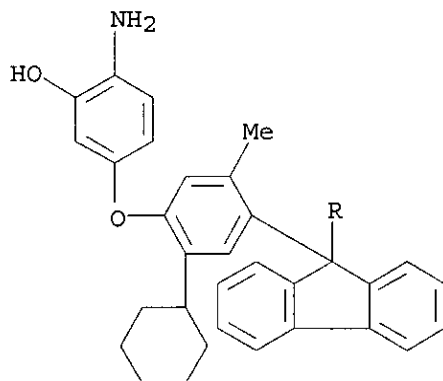
CN 1,3-Benzenedicarbonyl dichloride, 5-(1,1-dimethylethyl)-, polymer with 3,3'-[9H-fluoren-9-ylidenebis[(2-cyclohexyl-5-methyl-4,1-phenylene)oxy]]bis[6-aminophenol] (9CI) (CA INDEX NAME)

CM 1

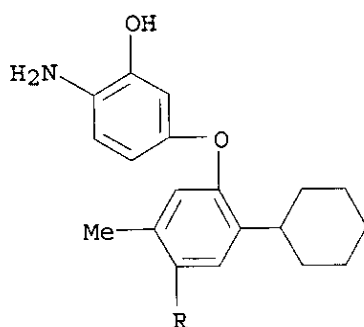
CRN 505072-94-6

CMF C51 H52 N2 O4

PAGE 1-A



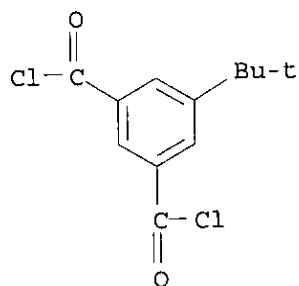
PAGE 2-A



CM 2

CRN 13239-25-3

CMF C12 H12 Cl2 O2



IC ICM C08G073-22

ICS H01L021-312

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 76

ST **polybenzoxazole** precursor polyamide insulating film bulky;

heat resistance film **polybenzoxazole** polyether

cardo semiconductor; methylcyclohexyl aminohydroxyphenoxyphenyl fluorene

butylisophthaloyl chloride **polybenzoxazole**

IT **Heat-resistant** materials

(films; **polybenzoxazole** precursors and their condensate organic
insulating films with good **heat resistance**)

IT Films

(**heat-resistant**; **polybenzoxazole**

precursors and their condensate organic insulating films with good
heat resistance)

IT Polyethers, **preparation**

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT

(Reactant or reagent)

(polyamide-, cardo; **polybenzoxazole** precursors and their

- condensate organic insulating films with good **heat resistance**)
- IT Polyethers, **preparation**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(polyamide-, fluorene group-containing, cardo; **polybenzoxazole** precursors and their condensate organic insulating films with good **heat resistance**)
- IT Polyethers, **preparation**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(polyamide-; **polybenzoxazole** precursors and their condensate organic insulating films with good **heat resistance**)
- IT Cardo polymers
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(polyamide-polyethers, fluorene group-containing; **polybenzoxazole** precursors and their condensate organic insulating films with good **heat resistance**)
- IT Cardo polymers
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(polyamide-polyethers; **polybenzoxazole** precursors and their condensate organic insulating films with good **heat resistance**)
- IT Dielectric films
Semiconductor devices
(**polybenzoxazole** precursors and their condensate organic insulating films with good **heat resistance**)
- IT Polyethers, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**polybenzoxazole**-, cardo; **polybenzoxazole** precursors and their condensate organic insulating films with good **heat resistance**)
- IT Polyethers, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**polybenzoxazole**-, **polybenzoxazole** precursors and their condensate organic insulating films with good **heat resistance**)
- IT Cardo polymers
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**polybenzoxazole**-polyether-; **polybenzoxazole** precursors and their condensate organic insulating films with good **heat resistance**)
- IT Polyamides, **preparation**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(polyether-, cardo; **polybenzoxazole** precursors and their condensate organic insulating films with good **heat**

- resistance)**
- IT **Polybenzoxazoles**
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (polyether-, cardo; **polybenzoxazole** precursors and their condensate organic insulating films with good **heat resistance)**
- IT **Polyamides, preparation**
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (polyether-, fluorene group-containing, cardo; **polybenzoxazole** precursors and their condensate organic insulating films with good **heat resistance)**
- IT **Polyamides, preparation**
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (polyether-; **polybenzoxazole** precursors and their condensate organic insulating films with good **heat resistance)**
- IT **Polybenzoxazoles**
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (polyether-; **polybenzoxazole** precursors and their condensate organic insulating films with good **heat resistance)**
- IT **505072-96-8P 505073-00-7P 505073-04-1P 505073-11-0P**
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (**polybenzoxazole** precursors and their condensate organic insulating films with good **heat resistance)**
- IT **505072-95-7P 505072-97-9P 505072-99-1P 505073-01-8P 505073-03-0P 505073-06-3P 505073-09-6P 505073-13-2P**
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (**polybenzoxazole** precursors and their condensate organic insulating films with good **heat resistance)**

L30 ANSWER 23 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:978475 CAPLUS

DOCUMENT NUMBER: 138:57579

TITLE: Composition and process for the **production** of a porous layer on substrates using the composition

INVENTOR(S): Sezi, Recai

PATENT ASSIGNEE(S): Germany

SOURCE: U.S. Pat. Appl. Publ., 8 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
US 2002198277	A1	20021226	US 2002-180438	20020626

DE 10130601 A1 20030109 DE 2001-10130601 20010626
 PRIORITY APPLN. INFO.: DE 2001-10130601 A 20010626

AB **Production** of a porous layer on a substrate includes using a composition which includes a first polymer component and a second polymer component (such as polycarbonates, polyacetals, aliphatic polyethers, and polyesters), the first polymer component being **polyhydroxyamide** and/or **polybenzoxazole** and stable at a temperature at which the second polymer component decomp. and volatilizes. When the composition is heated to the decomposition temperature of the second polymer component, the second component volatilizes and a porous layer that contains the first component remains.

IT 479070-81-ODP, carboxy-terminated 479070-82-1P

RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)

(component with higher thermal stability; **production** of porous **elec.** insulating coatings by heating blends containing polymers that volatilize at lower temps. than other polymers in blends on substrates)

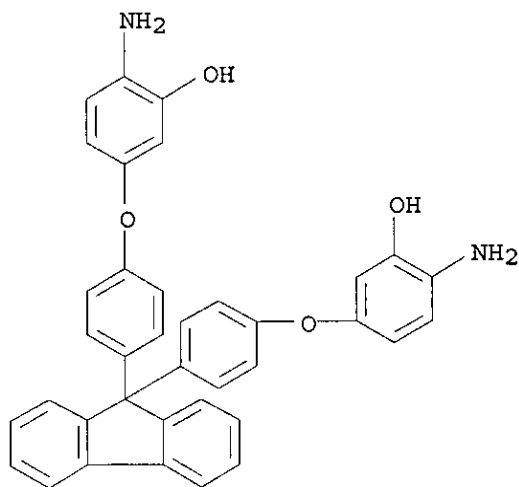
RN 479070-81-0 CAPLUS

CN 1,3-Benzenedicarbonyl dichloride, polymer with 3,3'-[9H-fluoren-9-ylidenebis(4,1-phenyleneoxy)]bis[6-aminophenol] (9CI) (CA INDEX NAME)

CM 1

CRN 359642-31-2

CMF C37 H28 N2 O4



CM 2

CRN 99-63-8

CMF C8 H4 Cl2 O2

polymers that volatilize at lower temps. than other polymers in blends on substrates)

IT **Electric insulators**

Porous materials

(coatings; **production** of porous **elec.** insulating coatings by heating blends containing polymers that volatilize at lower temps. than other polymers in blends on substrates)

IT **Polybenzoxazoles**

RL: TEM (Technical or engineered material use); USES (Uses)

(component with higher thermal stability; **production** of porous **elec.** insulating coatings by heating blends containing polymers that volatilize at lower temps. than other polymers in blends on substrates)

IT **Polyesters, uses**

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PROC (Process); USES (Uses)

(component with lower thermal stability; **production** of porous **elec.** insulating coatings by heating blends containing polymers that volatilize at lower temps. than other polymers in blends on substrates)

IT **Polycarbonates, uses**

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); POF (Polymer in formulation); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(component with lower thermal stability; **production** of porous **elec.** insulating coatings by heating blends containing polymers that volatilize at lower temps. than other polymers in blends on substrates)

IT **Polyamides, uses**

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); POF (Polymer in formulation); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(hydroxy-containing, component with higher thermal stability; **prodn** of porous **elec.** insulating coatings by heating blends containing polymers that volatilize at lower temps. than other polymers in blends on substrates)

IT **Dielectric films**

(porous; **production** of porous **dielec.** films by heating blends containing polymers that volatilize at lower temps. than other polymers in blends on substrates)

IT **Coating materials**

(porous; **production** of porous **elec.** insulating coatings by heating blends containing polymers that volatilize at lower temps. than other polymers in blends on substrates)

IT **Polyoxymethylenes, uses**

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PROC (Process); USES (Uses)

(**production** of porous **elec.** insulating coatings by heating blends containing polymers that volatilize at lower temps. than other polymers in blends on substrates)

IT **479070-81-ODP, carboxy-terminated 479070-82-1P**

RL: CPS (Chemical process); IMF (Industrial manufacture); PEP

(Physical, engineering or chemical process); POF (Polymer in formulation); TEM (Technical or engineered material use); **PREP (Preparation)**; PROC (Process); USES (Uses)

(component with higher thermal stability; **production** of porous **elec.** insulating coatings by heating blends containing polymers that volatilize at lower temps. than other polymers in blends on substrates)

IT 9046-10-0, Polypropylene glycol bis(2-aminopropyl ether)

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PROC (Process); USES (Uses)

(component with lower thermal stability; **production** of porous **elec.** insulating coatings by heating blends containing polymers that volatilize at lower temps. than other polymers in blends on substrates)

IT 479070-83-2P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)

(**production** of porous **elec.** insulating coatings by heating blends containing polymers that volatilize at lower temps. than other polymers in blends on substrates)

L30 ANSWER 24 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:778021 CAPLUS

DOCUMENT NUMBER: 137:295383

TITLE: **Polyhydroxyamides** for polyoxazole coating materials for electronic components

INVENTOR(S): Halik, Marcus; Lowack, Klaus; Sezi, Recai; Walter, Andreas

PATENT ASSIGNEE(S): Infineon Technologies AG, Germany

SOURCE: PCT Int. Appl., 73 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002079297	A2	20021010	WO 2002-EP3577	20020328
WO 2002079297	A3	20030130		

W: CN, JP, KR, US

DE 10115882	A1	20021205	DE 2001-10115882	20010330
-------------	----	----------	------------------	----------

PRIORITY APPLN. INFO.: DE 2001-10115882 A 20010330

AB The invention relates to soluble **polyhydroxyamide** compds. that, in the thermally cured form of their oxazoles, are suited as a **elec.** insulating, **heat-resistant** coating material, particularly for metallic and nonmetallic electronic components. A typical **polyhydroxyamide** was **manufactured** by stirring NMP containing 10 g 9,9'-bis[4-[(4-amino-3-hydroxy)phenoxy]phenyl]fluorene 1 h with γ -butyrolactone containing 4.83 g 5-ethynylisophthaloyl chloride at 10°, adding NMP containing 7.08 g UC Carb 100 [1,4-cyclohexanedimethanol polycarbonate bis(6-hydroxyhexyl ester)] dropwise,

stirring an addnl. 1.5 h at 10°, stirring 12 h at 20°, cooling to 10°, adding NMP containing 5.4 g Et3N, warming to room temperature, and stirring 2 h.

IT 470465-04-4P 470465-07-7P 470465-09-9P

470465-10-2P 470465-11-3P 470478-06-9P

RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); PREP (Preparation); PROC (Process)

(soluble polyhydroxyamides for heat-resistant polyoxazole coating materials for electronic components)

RN 470465-04-4 CAPLUS

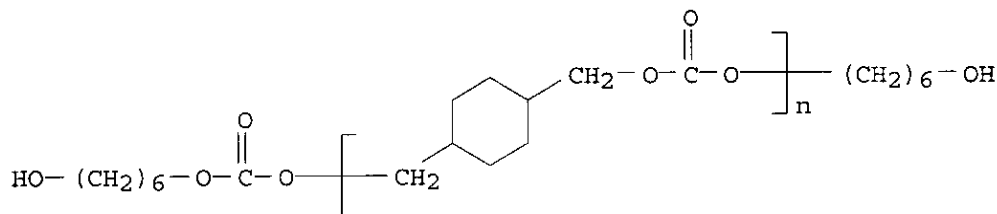
CN 1,2-Benzenedicarboxylic acid, polymer with 1,4-benzenedicarbonyl dichloride, 1,2-ethanediol, 3,3'-[9H-fluoren-9-ylidenebis(4,1-phenyleneoxy)]bis[6-aminophenol] and α-(6-hydroxyhexyl)-ω-[[[(6-hydroxyhexyl)oxy]carbonyl]oxy]poly(oxy carbonyloxymethylene-1,4-cyclohexanediylmethylene), block (9CI) (CA INDEX NAME)

CM 1

CRN 470465-03-3

CMF (C9 H14 O3)n C13 H26 O5

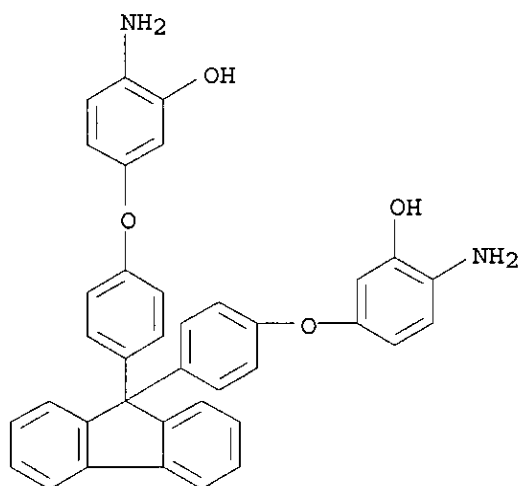
CCI PMS



CM 2

CRN 359642-31-2

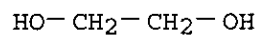
CMF C37 H28 N2 O4



CM 3

CRN 107-21-1

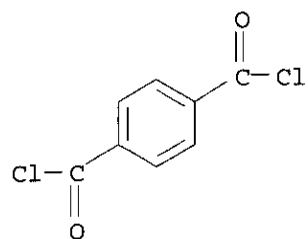
CMF C2 H6 O2



CM 4

CRN 100-20-9

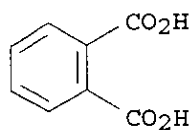
CMF C8 H4 Cl2 O2



CM 5

CRN 88-99-3

CMF C8 H6 O4



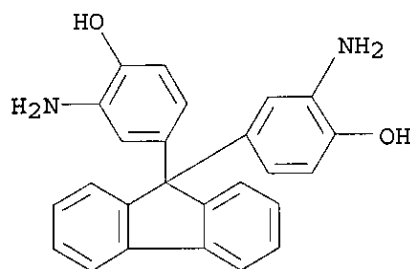
RN 470465-07-7 CAPLUS

CN 1,2-Benzenedicarboxylic acid, polymer with 1,3-benzenedicarbonyl dichloride, 1,2-ethanediol and 4,4'-(9H-fluoren-9-ylidene)bis[2-aminophenol], block (9CI) (CA INDEX NAME)

CM 1

CRN 20638-07-7

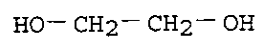
CMF C25 H20 N2 O2



CM 2

CRN 107-21-1

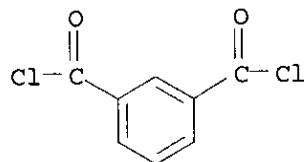
CMF C2 H6 O2



CM 3

CRN 99-63-8

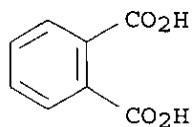
CMF C8 H4 Cl2 O2



CM 4

CRN 88-99-3

CMF C8 H6 O4



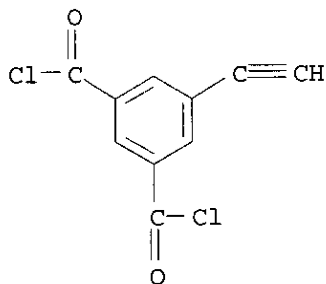
RN 470465-09-9 CAPLUS

CN Carbonic acid, polymer with 1,4-cyclohexanedimethanol, 5-ethynyl-1,3-benzenedicarbonyl dichloride and 4,4'-(9H-fluoren-9-ylidene)bis[2-aminophenol], block (9CI) (CA INDEX NAME)

CM 1

CRN 393543-05-0

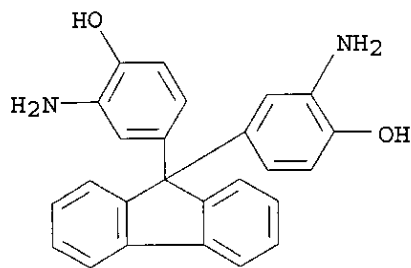
CMF C10 H4 Cl2 O2



CM 2

CRN 20638-07-7

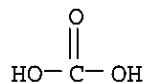
CMF C25 H20 N2 O2



CM 3

CRN 463-79-6

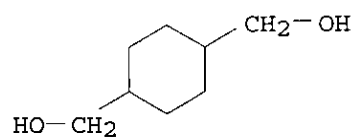
CMF C H2 O3



CM 4

CRN 105-08-8

CMF C8 H16 O2



RN 470465-10-2 CAPLUS

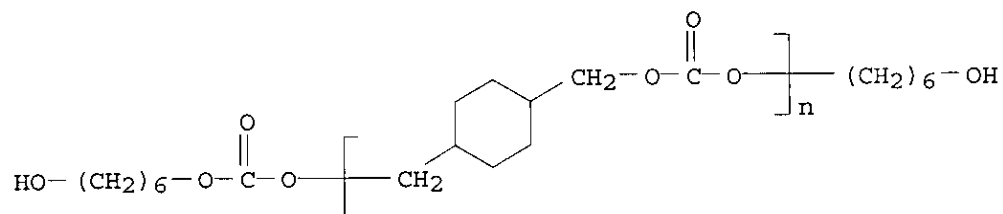
CN 1,3-Benzenedicarbonyl dichloride, 5-ethynyl-, polymer with
4,4'-(9H-fluoren-9-ylidene)bis[2-aminophenol] and α -(6-hydroxyhexyl)-
 ω -[[[(6-hydroxyhexyl)oxy]carbonyl]oxy]poly(oxy carbonyloxymethylene-
1,4-cyclohexanediylmethylene), block (9CI) (CA INDEX NAME)

CM 1

CRN 470465-03-3

CMF (C9 H14 O3)_n C13 H26 O5

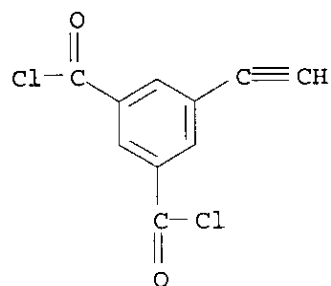
CCI PMS



CM 2

CRN 393543-05-0

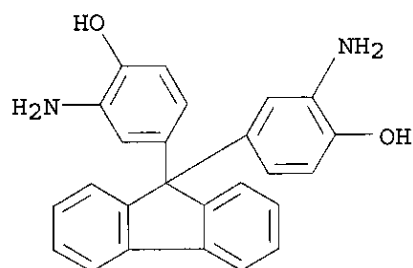
CMF C10 H4 Cl2 O2



CM 3

CRN 20638-07-7

CMF C25 H20 N2 O2



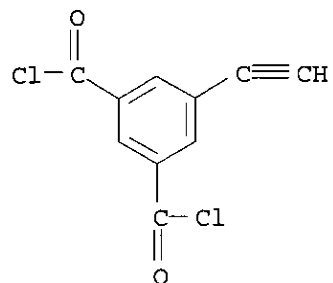
RN 470465-11-3 CAPLUS

CN Carbonic acid, polymer with 5-ethynyl-1,3-benzenedicarbonyl dichloride, 3,3'-[9H-fluoren-9-ylidenebis(4,1-phenyleneoxy)]bis[6-aminophenol] and 1,6-hexanediol, block (9CI) (CA INDEX NAME)

CM 1

CRN 393543-05-0

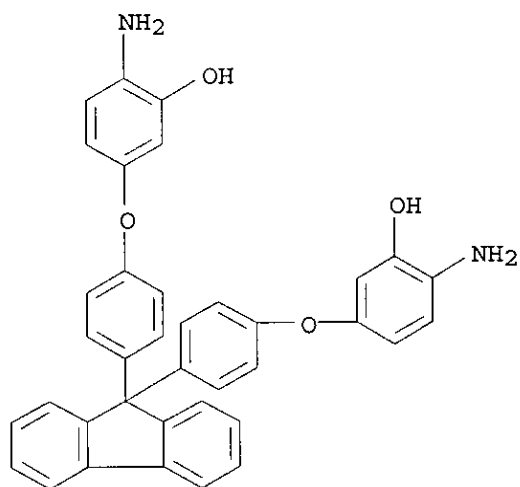
CMF C10 H4 Cl2 O2



CM 2

CRN 359642-31-2

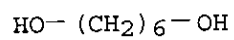
CMF C37 H28 N2 O4



CM 3

CRN 629-11-8

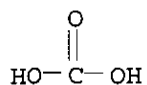
CMF C6 H14 O2



CM 4

CRN 463-79-6

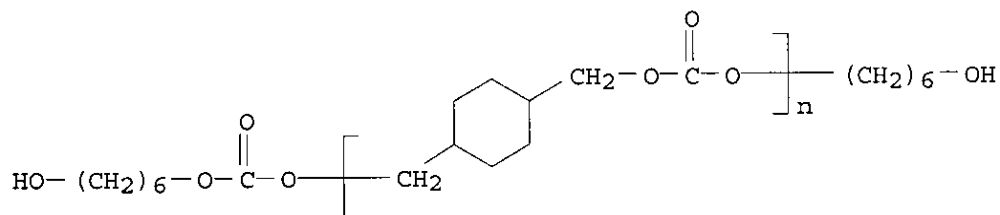
CMF C H2 O3



RN 470478-06-9 CAPLUS
 CN 1,3-Benzenedicarbonyl dichloride, 5-ethynyl-, polymer with
 3,3'-[9H-fluoren-9-ylidenebis(4,1-phenyleneoxy)]bis[6-aminophenol] and
 α -(6-hydroxyhexyl)- ω -[[[(6-hydroxyhexyl)oxy]carbonyl]oxy]poly(
 oxycarbonyloxymethylene-1,4-cyclohexanediylmethylene), block (9CI) (CA
 INDEX NAME)

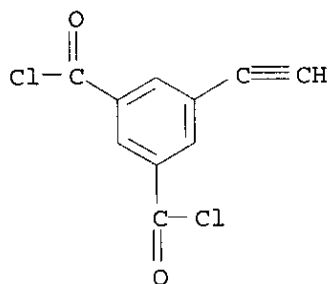
CM 1

CRN 470465-03-3
 CMF (C9 H14 O3)_n C13 H26 O5
 CCI PMS



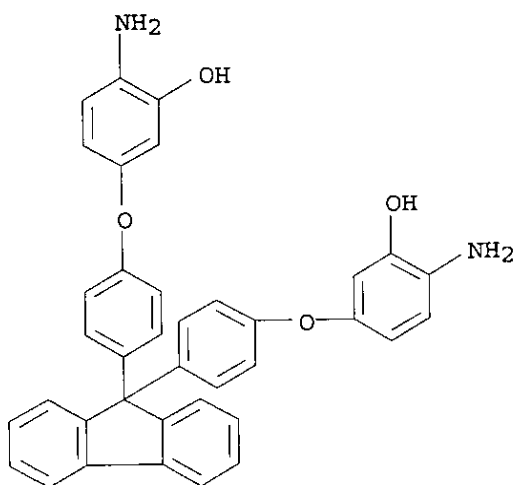
CM 2

CRN 393543-05-0
 CMF C10 H4 C12 O2



CM 3

CRN 359642-31-2
 CMF C37 H28 N2 O4



IT 470465-13-5P 470465-15-7P

RL: IMF (Industrial manufacture); PREP (Preparation)

(soluble polyhydroxyamides for heat-resistant
polyoxazole coating materials for electronic components)

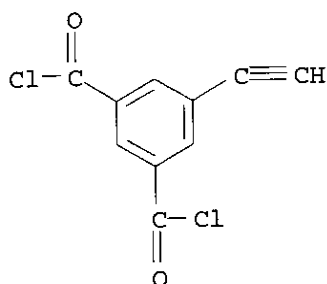
RN 470465-13-5 CAPLUS

CN Carbonic acid, polymer with 5-ethynyl-1,3-benzenedicarbonyl dichloride,
3,3'-[9H-fluoren-9-ylidenebis(4,1-phenyleneoxy)]bis[6-aminophenol],
1,6-hexanediol and 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis
[2-aminophenol], block (9CI) (CA INDEX NAME)

CM 1

CRN 393543-05-0

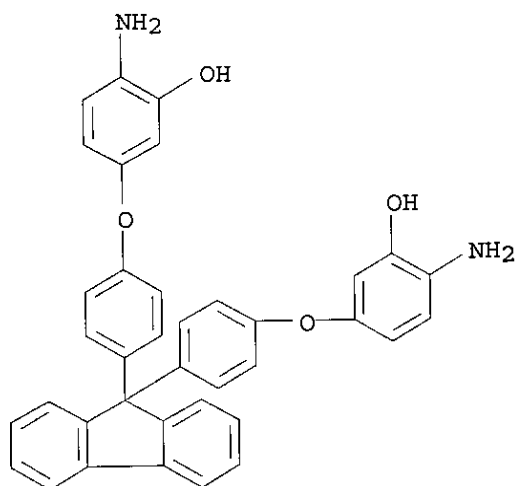
CMF C10 H4 Cl2 O2



CM 2

CRN 359642-31-2

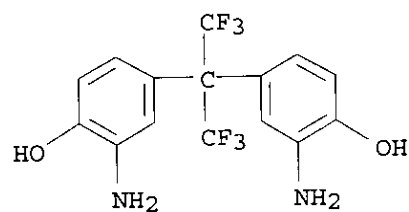
CMF C37 H28 N2 O4



CM 3

CRN 83558-87-6

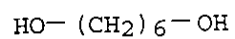
CMF C15 H12 F6 N2 O2



CM 4

CRN 629-11-8

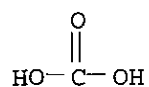
CMF C6 H14 O2



CM 5

CRN 463-79-6

CMF C H2 O3



RN 470465-15-7 CAPLUS

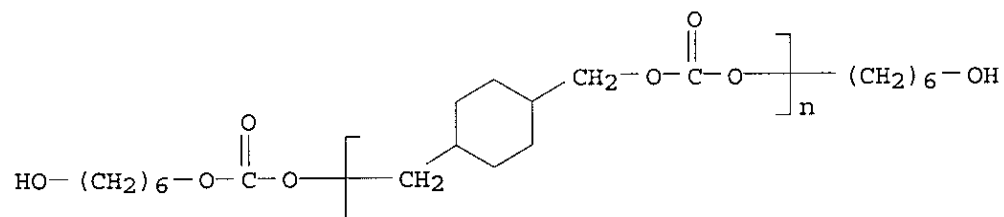
CN 1,3-Benzenedicarbonyl dichloride, 5-ethynyl-, polymer with
1,4-benzenedicarbonyl dichloride, 3,3'-diamino[1,1'-biphenyl]-4,4'-diol,
3,3'-[9H-fluoren-9-ylidenebis(4,1-phenyleneoxy)]bis[6-aminophenol] and
 α -(6-hydroxyhexyl)- ω -[[[(6-hydroxyhexyl)oxy]carbonyl]oxy]poly(
oxycarbonyloxymethylene-1,4-cyclohexanediylmethylene), block (9CI) (CA
INDEX NAME)

CM 1

CRN 470465-03-3

CMF (C9 H14 O3)_n C13 H26 O5

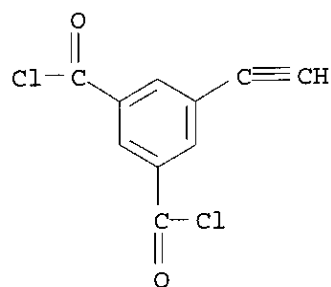
CCI PMS



CM 2

CRN 393543-05-0

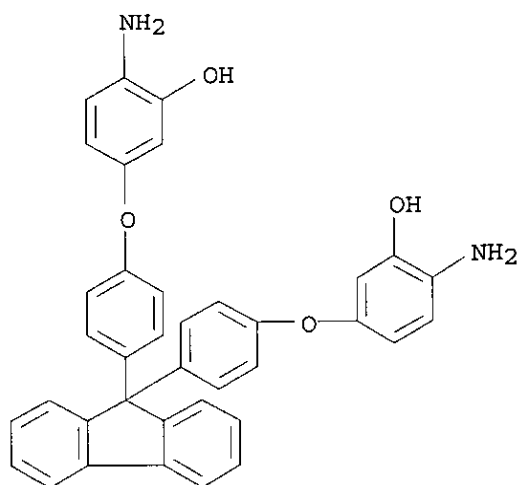
CMF C10 H4 Cl2 O2



CM 3

CRN 359642-31-2

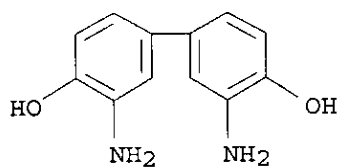
CMF C37 H28 N2 O4



CM 4

CRN 4194-40-5

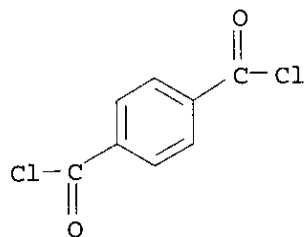
CMF C12 H12 N2 O2



CM 5

CRN 100-20-9

CMF C8 H4 Cl2 O2



IC ICM C08G069-26

- ICS C08G069-32; C08G073-22; H01B003-30
- CC 35-5 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 76
- ST polyoxazole thermosetting **elec** insulating **heat resistant** coating electronic component; cyclohexanedimethanol polycarbonate bishydroxyhexyl ester **polyhydroxyamide** **manuf** polyoxazole precursor; bisaminohydroxyphenoxyphenylfluorene ethynylisophthaloyl chloride copolymer **manuf** polyoxazole precursor; soluble **polyhydroxyamide** precursor thermosetting coating electronic component
- IT Polycarbonates, **preparation**
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); PREP (Preparation); PROC (Process)
(polyamide-, block, cardo; soluble **polyhydroxyamides** for **heat-resistant** polyoxazole coating materials for electronic components)
- IT Polycarbonates, **preparation**
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); PREP (Preparation); PROC (Process)
(polyamide-, block; soluble **polyhydroxyamides** for **heat-resistant** polyoxazole coating materials for electronic components)
- IT Polyesters, **preparation**
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); PREP (Preparation); PROC (Process)
(polyamide-, fluorine-containing, block; soluble **polyhydroxyamides** for **heat-resistant** polyoxazole coating materials for electronic components)
- IT Polycarbonates, **preparation**
Polyoxyalkylenes, **preparation**
RL: IMF (Industrial manufacture); PREP (Preparation)
(polyamide-, fluorine-containing, block; soluble **polyhydroxyamides** for **heat-resistant** polyoxazole coating materials for electronic components)
- IT Polyethers, **preparation**
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); PREP (Preparation); PROC (Process)
(polyamide-polycarbonate-, block, cardo; soluble **polyhydroxyamides** for **heat-resistant** polyoxazole coating materials for electronic components)
- IT Fluoropolymers, **preparation**
RL: IMF (Industrial manufacture); PREP (Preparation)
(polyamide-polycarbonate-, block; soluble **polyhydroxyamides** for **heat-resistant** polyoxazole coating materials for electronic components)
- IT Polyethers, **preparation**
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); PREP (Preparation);

- PROC (Process)
(polyamide-polycarbonate-, fluorine-containing, block, cardo; soluble **polyhydroxyamides** for **heat-resistant** polyoxazole coating materials for electronic components)
- IT Fluoropolymers, **preparation**
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); PREP (Preparation);
PROC (Process)
(polyamide-polycarbonate-polyether-, block, cardo; soluble **polyhydroxyamides** for **heat-resistant** polyoxazole coating materials for electronic components)
- IT Cardo polymers
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); PREP (Preparation);
PROC (Process)
(polyamide-polycarbonate-polyether-, fluorine-containing, block; soluble **polyhydroxyamides** for **heat-resistant** polyoxazole coating materials for electronic components)
- IT Cardo polymers
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); PREP (Preparation);
PROC (Process)
(polyamide-polycarbonate-polyethers, block; soluble **polyhydroxyamides** for **heat-resistant** polyoxazole coating materials for electronic components)
- IT Cardo polymers
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); PREP (Preparation);
PROC (Process)
(polyamide-polycarbonates, block; soluble **polyhydroxyamides** for **heat-resistant** polyoxazole coating materials for electronic components)
- IT Polyethers, **preparation**
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); PREP (Preparation);
PROC (Process)
(polyamide-polyester-, block, cardo; soluble **polyhydroxyamides** for **heat-resistant** polyoxazole coating materials for electronic components)
- IT Fluoropolymers, **preparation**
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); PREP (Preparation);
PROC (Process)
(polyamide-polyester-, block; soluble **polyhydroxyamides** for **heat-resistant** polyoxazole coating materials for electronic components)
- IT Cardo polymers
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); PREP (Preparation);
PROC (Process)
(polyamide-polyester-polyethers, block; soluble **polyhydroxyamides** for **heat-resistant** polyoxazole coating materials)

- for electronic components)
- IT Polycarbonates, **preparation**
Polyesters, **preparation**
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); PREP (Preparation); PROC (Process)
(polyamide-polyether-, block, cardo; soluble **polyhydroxyamides** for **heat-resistant** polyoxazole coating materials for electronic components)
- IT Polycarbonates, **preparation**
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); PREP (Preparation); PROC (Process)
(polyamide-polyether-, fluorine-containing, block, cardo; soluble **polyhydroxyamides** for **heat-resistant** polyoxazole coating materials for electronic components)
- IT Fluoropolymers, **preparation**
RL: IMF (Industrial manufacture); PREP (Preparation)
(polyamide-polyoxyalkylene-, block; soluble **polyhydroxyamides** for **heat-resistant** polyoxazole coating materials for electronic components)
- IT Polycarbonates, **preparation**
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polybenzoxazole-, block, cardo; soluble **polyhydroxyamides** for **heat-resistant** polyoxazole coating materials for electronic components)
- IT Polycarbonates, **preparation**
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polybenzoxazole-, block; soluble **polyhydroxyamides** for **heat-resistant** polyoxazole coating materials for electronic components)
- IT Polyesters, **preparation**
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polybenzoxazole-, fluorine-containing, block; soluble **polyhydroxyamides** for **heat-resistant** polyoxazole coating materials for electronic components)
- IT Polyethers, **preparation**
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polybenzoxazole-polycarbonate-, block, cardo; soluble **polyhydroxyamides** for **heat-resistant** polyoxazole coating materials for electronic components)
- IT Polyethers, **preparation**
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polybenzoxazole-polycarbonate-, fluorine-containing, block, cardo; soluble **polyhydroxyamides** for **heat-resistant** polyoxazole coating materials for electronic components)

- IT Fluoropolymers, **preparation**
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polybenzoxazole-polycarbonate-polyether-, block, cardo; soluble polyhydroxyamides for heat-resistant polyoxazole coating materials for electronic components)
- IT Cardo polymers
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polybenzoxazole-polycarbonate-polyethers, block; soluble polyhydroxyamides for heat-resistant polyoxazole coating materials for electronic components)
- IT Cardo polymers
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polybenzoxazole-polycarbonate-polyethers, fluorine-containing, block; soluble polyhydroxyamides for heat-resistant polyoxazole coating materials for electronic components)
- IT Cardo polymers
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polybenzoxazole-polycarbonates, block; soluble polyhydroxyamides for heat-resistant polyoxazole coating materials for electronic components)
- IT Polyethers, **preparation**
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polybenzoxazole-polyester-, block, cardo; soluble polyhydroxyamides for heat-resistant polyoxazole coating materials for electronic components)
- IT Fluoropolymers, **preparation**
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polybenzoxazole-polyester-, block; soluble polyhydroxyamides for heat-resistant polyoxazole coating materials for electronic components)
- IT Cardo polymers
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polybenzoxazole-polyester-polyethers, block; soluble polyhydroxyamides for heat-resistant polyoxazole coating materials for electronic components)
- IT Polycarbonates, **preparation**
Polyesters, **preparation**
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polybenzoxazole-polyether-, block, cardo; soluble polyhydroxyamides for heat-resistant polyoxazole coating materials for electronic components)
- IT Polycarbonates, **preparation**
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or

engineered material use); PREP (Preparation); USES (Uses)
(polybenzoxazole-polyether-, fluorine-containing, block, cardo;
soluble polyhydroxyamides for heat-resistant
polyoxazole coating materials for electronic components)

IT **Polyamides, preparation**

RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); PREP (Preparation); PROC (Process)

(polycarbonate-, block, cardo; soluble polyhydroxyamides for
heat-resistant polyoxazole coating materials for
electronic components)

IT **Polybenzoxazoles**

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polycarbonate-, block, cardo; soluble polyhydroxyamides for
heat-resistant polyoxazole coating materials for
electronic components)

IT **Polyamides, preparation**

RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); PREP (Preparation); PROC (Process)

(polycarbonate-, block; soluble polyhydroxyamides for
heat-resistant polyoxazole coating materials for
electronic components)

IT **Polybenzoxazoles**

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polycarbonate-, block; soluble polyhydroxyamides for
heat-resistant polyoxazole coating materials for
electronic components)

IT **Polyamides, preparation**

RL: IMF (Industrial manufacture); PREP (Preparation)

(polycarbonate-, fluorine-containing, block; soluble polyhydroxyamides
for heat-resistant polyoxazole coating materials
for electronic components)

IT **Polyamides, preparation**

RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); PREP (Preparation); PROC (Process)

(polycarbonate-polyether-, block, cardo; soluble polyhydroxyamides
for heat-resistant polyoxazole coating materials
for electronic components)

IT **Polybenzoxazoles**

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polycarbonate-polyether-, block, cardo; soluble polyhydroxyamides
for heat-resistant polyoxazole coating materials
for electronic components)

IT **Polyamides, preparation**

RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); PREP (Preparation); PROC (Process)

- (polycarbonate-polyether-, fluorine-containing, block, cardo; soluble **polyhydroxyamides** for **heat-resistant** polyoxazole coating materials for electronic components)
- IT **Polybenzoxazoles**
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polycarbonate-polyether-, fluorine-containing, block, cardo; soluble **polyhydroxyamides** for **heat-resistant** polyoxazole coating materials for electronic components)
- IT **Polyamides, preparation**
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); PREP (Preparation); PROC (Process)
(polyester-, fluorine-containing, block; soluble **polyhydroxyamides** for **heat-resistant** polyoxazole coating materials for electronic components)
- IT **Polybenzoxazoles**
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyester-, fluorine-containing, block; soluble **polyhydroxyamides** for **heat-resistant** polyoxazole coating materials for electronic components)
- IT **Polyamides, preparation**
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); PREP (Preparation); PROC (Process)
(polyester-polyether-, block, cardo; soluble **polyhydroxyamides** for **heat-resistant** polyoxazole coating materials for electronic components)
- IT **Polybenzoxazoles**
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyester-polyether-, block, cardo; soluble **polyhydroxyamides** for **heat-resistant** polyoxazole coating materials for electronic components)
- IT **Polyamides, preparation**
RL: IMF (Industrial manufacture); PREP (Preparation)
(polyoxyalkylene-, fluorine-containing, block; soluble **polyhydroxyamides** for **heat-resistant** polyoxazole coating materials for electronic components)
- IT **Electric insulators**
Electronic packages
Electronic packaging materials
Electronic packaging process
Heat-resistant materials
Interconnections, **electric**
(soluble **polyhydroxyamides** for **heat-resistant** polyoxazole coating materials for electronic components)
- IT **Polyamides, preparation**
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); PREP (Preparation); PROC (Process)

(soluble **polyhydroxyamides** for **heat-resistant**
polyoxazole coating materials for electronic components)

IT **Polybenzoxazoles**
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or
engineered material use); PREP (Preparation); USES (Uses)
(soluble **polyhydroxyamides** for **heat-resistant**
polyoxazole coating materials for electronic components)

IT 7440-21-3, Silicon, miscellaneous
RL: MSC (Miscellaneous)
(nitride-coated, wafers; soluble **polyhydroxyamides** for
heat-resistant polyoxazole coating materials for
electronic components)

IT 12033-62-4, Tantalum nitride 25583-20-4, Titanium nitride
RL: MSC (Miscellaneous)
(silicon wafers coated by; soluble **polyhydroxyamides** for
heat-resistant polyoxazole coating materials for
electronic components)

IT 470465-01-1P 470465-02-2P 470465-04-4P 470465-05-5P
470465-06-6P 470465-07-7P 470465-08-8P 470465-09-9P
470465-10-2P 470465-11-3P 470478-06-9P
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP
(Physical, engineering or chemical process); PRP (Properties); PREP
(Preparation); PROC (Process)
(soluble **polyhydroxyamides** for **heat-resistant**
polyoxazole coating materials for electronic components)

IT 470465-12-4P 470465-13-5P 470465-14-6P 470465-15-7P
470465-16-8P
RL: IMF (Industrial manufacture); PREP (Preparation)
(soluble **polyhydroxyamides** for **heat-resistant**
polyoxazole coating materials for electronic components)

L30 ANSWER 25 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:716885 CAPLUS
DOCUMENT NUMBER: 137:240773
TITLE: Method for **producing** a porous polymer
coating for electronic devices
INVENTOR(S): Sezi, Recai
PATENT ASSIGNEE(S): Germany
SOURCE: U.S. Pat. Appl. Publ., 8 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2002132061	A1	20020919	US 2002-98845	20020314
DE 10112561	A1	20021002	DE 2001-10112561	20010315
DE 10112561	C2	20031218		

PRIORITY APPLN. INFO.: DE 2001-10112561 A 20010315
AB The present invention relates to a simple and reproducible process for

producing a organic polymer porous layer which strongly adheres to a substrate, which comprises the steps: (a) **preparation** of a composition comprising an organic polymer constituent and an inorg.-organic constituent and/or an inorg. constituent, (b) application of this composition to a substrate and formation of a layer on the substrate, and (c) removal of the inorg.-organic constituent and/or the inorg. constituent from the layer to form a porous layer adhering to the substrate.

IT 459451-70-8P 459451-72-0P

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)

(in method for **producing** porous polymer coating for electronic devices)

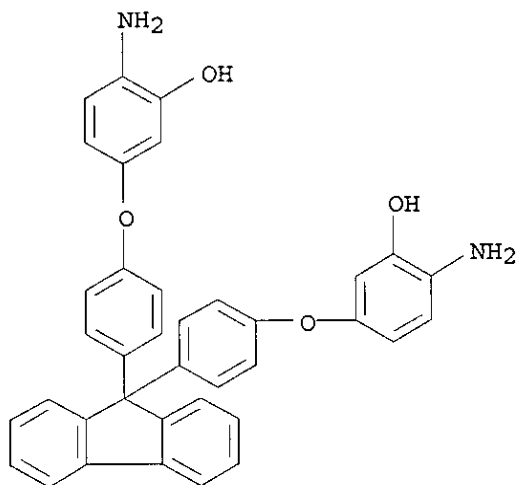
RN 459451-70-8 CAPLUS

CN 1,4-Benzenedicarbonyl dichloride, polymer with 3,3'-[9H-fluoren-9-ylidenebis(4,1-phenyleneoxy)]bis[6-aminophenol] and 4,4'-(1,1,3,3-tetramethyl-1,3-disiloxanediyl)bis[butanoyl chloride] (9CI) (CA INDEX NAME)

CM 1

CRN 359642-31-2

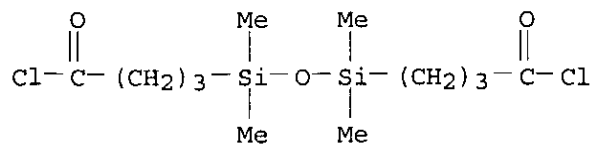
CMF C37 H28 N2 O4



CM 2

CRN 45232-94-8

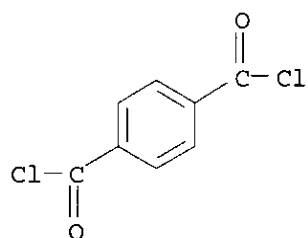
CMF C12 H24 Cl2 O3 Si2



CM 3

CRN 100-20-9

CMF C8 H4 Cl2 O2



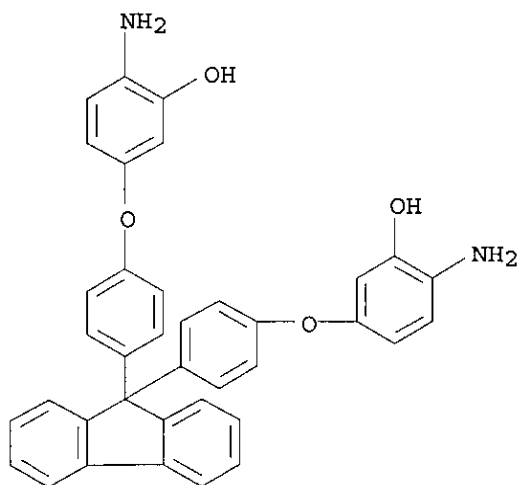
RN 459451-72-0 CAPLUS

CN 1,4-Benzenedicarbonyl dichloride, polymer with dihydro-2(3H)-furanone and 3,3'-[9H-fluoren-9-ylidenebis(4,1-phenyleneoxy)]bis[6-aminophenol] (9CI) (CA INDEX NAME)

CM 1

CRN 359642-31-2

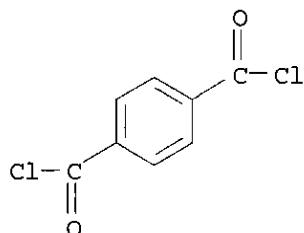
CMF C37 H28 N2 O4



CM 2

CRN 100-20-9

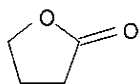
CMF C8 H4 Cl2 O2



CM 3

CRN 96-48-0

CMF C4 H6 O2



IC ICM C23C014-02

ICS B05D005-00

NCL 427534000

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 35, 38

ST porous polymer adherent coating electronics

IT Memory devices

(DRAM (dynamic random access); method for **producing** porous polymer coating for electronic devices)

IT Polymers, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(co-; in method for **producing** porous polymer coating for electronic devices)

IT Porous materials

(films; method for **producing** porous polymer adherent coating for electronic devices)

IT Amides, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(hydroxy, polymers; in method for **producing** porous polymer coating for electronic devices)

IT Drying

Etching

Heat treatment

Plasma

Surfactants

(in method for **producing** porous polymer coating for
electronic devices)

IT Alcohols, processes

RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical,
engineering or chemical process); PROC (Process); USES (Uses)

(in method for **producing** porous polymer coating for
electronic devices)

IT Noble gases, uses

RL: NUU (Other use, unclassified); USES (Uses)

(in method for **producing** porous polymer coating for
electronic devices)

IT Polysiloxanes, processes

RL: PEP (Physical, engineering or chemical process); PYP (Physical
process); SPN (Synthetic preparation); TEM (Technical or engineered
material use); PREP (Preparation); PROC (Process); USES (Uses)

(in method for **producing** porous polymer coating for
electronic devices)

IT Acrylic polymers, processes

Chlorides, processes

Epoxy resins, processes

Fluorides, processes

Hydroxides (inorganic)

RL: PEP (Physical, engineering or chemical process); PYP (Physical
process); TEM (Technical or engineered material use); PROC (Process); USES
(Uses)

(in method for **producing** porous polymer coating for
electronic devices)

IT Metallocenes

Organometallic compounds

Polybenzimidazoles

Polybenzoxazoles

Polyethers, uses

Polyimides, uses

Polyoxadiazoles

Polyquinolines

Polyquinoxalines

Silanes

Silicates, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(in method for **producing** porous polymer coating for
electronic devices)

IT Dielectric films

Electronic packages

Logic circuits

Nonvolatile memory devices

Printed circuit boards

Semiconductor memory devices

(method for **producing** porous polymer coating for electronic
devices)

- IT Computers
(microprocessors; method for **producing** porous polymer coating for electronic devices)
- IT Etching
(plasma; in method for **producing** porous polymer coating for electronic devices)
- IT Films
(porous; method for **producing** porous polymer adherent coating for electronic devices)
- IT Coating process
(spin; in method for **producing** porous polymer coating for electronic devices)
- IT 56-23-5, Carbon tetrachloride, processes 75-46-7, Trifluoromethane 75-73-0, Carbon fluoride (CF₄) 100-20-9, Terephthaloyl dichloride 2469-55-8, 1,3-Bis(3-aminopropyl)tetramethyldisiloxane 7647-01-0, Hydrochloric acid, processes 7664-39-3, Hydrofluoric acid, processes 7782-41-4, Fluorine, processes 7782-44-7, Oxygen, processes 7782-50-5, Chlorine, processes 10294-34-5, Boron chloride (BCl₃) 45232-94-8 359642-31-2
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(in method for **producing** porous polymer coating for electronic devices)
- IT **459451-70-8P 459451-72-0P**
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); **SPN (Synthetic preparation); PREP (Preparation)**; PROC (Process)
(in method for **producing** porous polymer coating for electronic devices)
- IT 124-38-9, Carbon dioxide, uses 7446-09-5, Sulfur oxide (SO₂), uses
RL: NUU (Other use, unclassified); USES (Uses)
(in method for **producing** porous polymer coating for electronic devices)
- IT 9003-53-6, Polystyrene
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(in method for **producing** porous polymer coating for electronic devices)
- IT 512-63-0 553-12-8D, 8,13-Divinyl-3,7,12,17-tetramethyl-21H,23H-porphin-2,18-dipropionic acid, zinc complex 1273-94-5, 1,1'-Diacetylferrocene 4098-30-0, Dodecamethylcyclohexasilane 7429-90-5, Aluminum, uses 7429-90-5D, Aluminum, compds. or salts 7439-89-6, Iron, uses 7439-89-6D, Iron, compds. or salts 7439-89-6D, Iron, hexadecafluorophthalocyanine complexes 7439-96-5, Manganese, uses 7439-96-5D, Manganese, compds. or salts 7440-02-0, Nickel, uses 7440-02-0D, Nickel, compds. or salts 7440-02-0D, Nickel, hexadecafluorophthalocyanine complexes 7440-21-3, Silicon, uses 7440-21-3D, Silicon, salts 7440-31-5, Tin, uses 7440-31-5D, Tin, compds. or salts 7440-31-5D, Tin, naphthalocyanine complexes 7440-32-6, Titanium, uses 7440-32-6D, Titanium, compds. 7440-42-8, Boron, uses 7440-42-8D, Boron, compds. or salts 7440-47-3, Chromium,

uses 7440-47-3D, Chromium, compds. or salts 7440-48-4, Cobalt, uses 7440-48-4D, Cobalt, compds. or salts 7440-48-4D, Cobalt, hexadecafluorophthalocyanine complexes 7440-48-4D, Cobalt, naphthalocyanine complexes 7440-50-8, Copper, uses 7440-50-8D, Copper, compds. or salts 7440-50-8D, Copper, hexadecafluorophthalocyanine complexes 7440-50-8D, Copper, naphthalocyanine complexes 7440-55-3, Gallium, uses 7440-55-3D, Gallium, compds. or salts 7440-56-4, Germanium, uses 7440-56-4D, Germanium, compds. or salts 7440-62-2, Vanadium, uses 7440-62-2D, Vanadium, compds. or salts 7440-66-6, Zinc, uses 7440-66-6D, Zinc, complex with 8,13-divinyl-3,7,12,17-tetramethyl-21H,23H-porphin-2,18-dipropionic acid 7631-86-9, Silica, uses 12033-89-5, Silicon nitride, uses 13463-67-7, Titania, uses 20543-06-0, Nickel oxalate 23627-89-6D, 2,3-Naphthalocyanine, transition metal complexes 112243-78-4 112712-64-8 117446-19-2D, Hexadecafluoro-29H,31H-phthalocyanine, transition metal complexes 129707-63-7

RL: TEM (Technical or engineered material use); USES (Uses)
(in method for **producing** porous polymer coating for electronic devices)

IT 96-48-0, γ -Butyrolactone 108-94-1, Cyclohexanone, uses 111-90-0, Diethylene glycol monoethyl ether 112-36-7, Diethylene glycol diethyl ether 120-92-3, Cyclopentanone 127-19-5, Dimethylacetamide 872-50-4, N-Methylpyrrolidone, uses 14272-48-1 84540-57-8, Methoxypropyl acetate
RL: NUU (Other use, unclassified); USES (Uses)

(solvent; in method for **producing** porous polymer coating for electronic devices)

L30 ANSWER 26 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:686571 CAPLUS

DOCUMENT NUMBER: 137:218062

TITLE: Insulation films for semiconductor devices with good heat and moisture resistance and benzoxazole ring-formable polyamide varnishes for their **manufacture**

INVENTOR(S): Oki, Hiromi; Enoki, Naoshi

PATENT ASSIGNEE(S): Sumitomo Bakelite Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 25 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002256146	A2	20020911	JP 2001-57435	20010301
PRIORITY APPLN. INFO.:			JP 2001-57435	20010301

AB The varnishes contain copolymers (C) of (A) **polyamides** derived from ethynyl group-containing dicarboxylic acids and other dicarboxylic acids and dihydroxy diamine compds. and (B) oligomers bearing functional groups which can react with functional groups of A, and (D) oligomers (optionally bearing A-reactive groups). Thus, adding 4-ethynyl-2,6-

naphthalenedicarboxylic dichloride 27.7 to a dissoln. of 2,2-bis(3-amino-4-hydroxyphenyl)hexafluoropropane in N-methyl-2-pyrrolidone (330 mL), mixing at 20° for 1 h, cooling to 10°, adding triethylamine 22.3 and 4-aminobenzoyl ester-terminated styrene oligomer (B) 38.4 g dissolved in γ -butyrolactone (100 mL), mixing for 1 h, filtering, and dropping into a mixture of 6.6 L water and 6.6 L i-PrOH gave a copolymer (C). Mixing 30.0 g the C with 4.9 g the B dissolved in 100 mL N-methyl-2-pyrrolidone, filtering, coating the resulting filtrate on a Si wafer and baking gave a porous coat film having polybenzoxazole structure and dielec. constant 1.96.

IT 405932-06-1P 455281-89-7P, 9,9-Bis[4-[(4-amino-3-hydroxy)phenoxy]phenyl]fluorene-5-ethynylterephthalic chloride-polypropylene glycol bis(2-aminopropyl ether) block copolymer
 RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(insulation films for semiconductor devices with good heat and moisture resistance and hydroxy group-containing polyamide varnishes for manufacture)

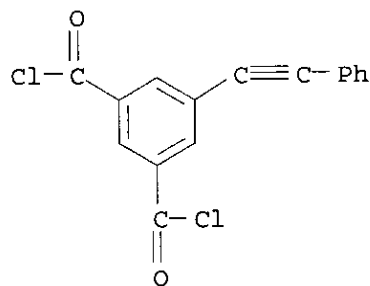
RN 405932-06-1 CAPLUS

CN 1,3-Benzenedicarbonyl dichloride, 5-ethynyl-, polymer with α -(2-aminopropyl)- ω -(2-aminopropoxy)poly[oxy(methyl-1,2-ethanediyl)], 3,3'-[9H-fluorene-9-ylidenebis(4,1-phenyleneoxy)]bis[6-aminophenol] and 5-(phenylethynyl)-1,3-benzenedicarbonyl dichloride, block (9CI) (CA INDEX NAME)

CM 1

CRN 393543-14-1

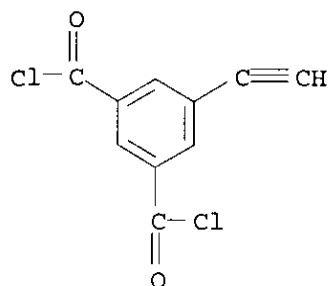
CMF C16 H8 Cl2 O2



CM 2

CRN 393543-05-0

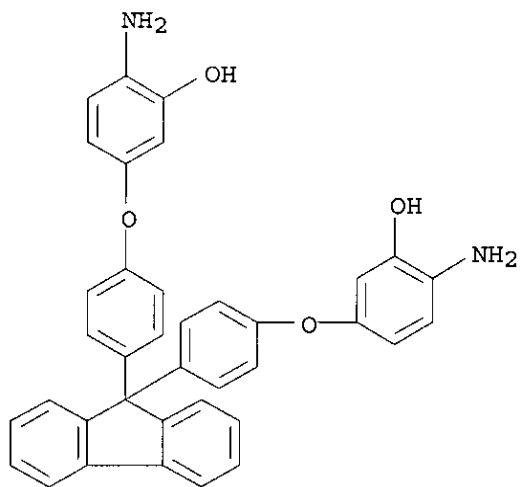
CMF C10 H4 Cl2 O2



CM 3

CRN 359642-31-2

CMF C37 H28 N2 O4

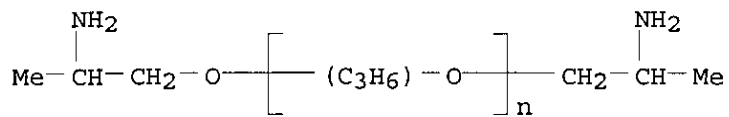


CM 4

CRN 26403-64-5

CMF (C3 H6 O)_n C6 H16 N2 O

CCI IDS, PMS



RN 455281-89-7 CAPLUS

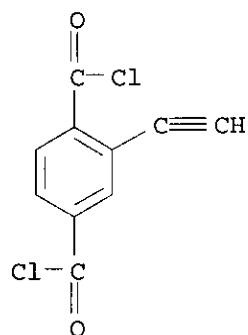
CN 1,4-Benzenedicarbonyl dichloride, 2-ethynyl-, polymer with

α -(2-aminopropyl)- ω -(2-aminopropoxy)poly[oxy(methyl-1,2-ethanediyl)] and 3,3'-[9H-fluoren-9-ylidenebis(4,1-phenyleneoxy)]bis[6-aminophenol], block (9CI) (CA INDEX NAME)

CM 1

CRN 393543-09-4

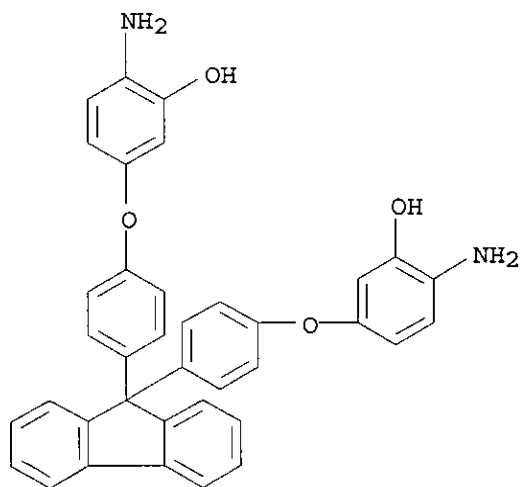
CMF C10 H4 C12 O2



CM 2

CRN 359642-31-2

CMF C37 H28 N2 O4

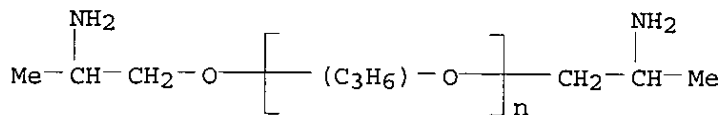


CM 3

CRN 26403-64-5

CMF (C3 H6 O)_n C6 H16 N2 O

CCI IDS, PMS



- IC ICM C08L077-06
ICS C08G073-22; C09D005-25; C09D177-00; C09D179-04; H01B003-30;
H01L021-312
- CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 76
- ST low k insulation film semiconductor device polyamide
polybenzoxazole crosslinking
- IT **Dielectric** films
Electric insulators
Semiconductor devices
(insulation films for semiconductor devices with good heat and moisture resistance and hydroxy group-containing polyamide varnishes for **manufacture**)
- IT Polyoxyalkylenes, uses
RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(insulation films for semiconductor devices with good heat and moisture resistance and hydroxy group-containing polyamide varnishes for **manufacture**)
- IT **Polybenzoxazoles**
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyamide-; insulation films for semiconductor devices with good heat and moisture resistance and hydroxy group-containing polyamide varnishes for **manufacture**)
- IT **Polyamides**, uses
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**polybenzoxazole**-; insulation films for semiconductor devices with good heat and moisture resistance and hydroxy group-containing polyamide varnishes for **manufacture**)
- IT 405931-95-5P, 2,2-Bis(3-amino-4-hydroxyphenyl)hexafluoropropane-4-ethynyl-2,6-naphthalenedicarboxylic acid dichloride-styrene block copolymer
405931-96-6P, 2,2-Bis(3-amino-4-hydroxyphenyl)hexafluoropropane-ethylene oxide-5-ethynylterephthalic chloride-propylene oxide block copolymer
405932-02-7P, 2,2-Bis(3-amino-4-hydroxyphenyl)hexafluoropropane-5-phenylethynylisophthalic dichloride-polypropylene glycol bis(2-aminopropyl ether) block copolymer 405932-03-8P 405932-04-9P **405932-06-1P**
455281-89-7P, 9,9-Bis[4-[(4-amino-3-hydroxy)phenoxy]phenyl]fluorene-5-ethynylterephthalic chloride-polypropylene glycol bis(2-aminopropyl ether) block copolymer 455281-90-0P
RL: **IMF (Industrial manufacture)**; POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); **PREP**

(Preparation); USES (Uses)

(insulation films for semiconductor devices with good heat and moisture resistance and hydroxy group-containing polyamide varnishes for **manufacture**)

IT 9003-53-6DP, Polystyrene, hydroxy-terminated, esters with aminobenzoic acid 163845-57-6P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(insulation films for semiconductor devices with good heat and moisture resistance and hydroxy group-containing polyamide varnishes for **manufacture**)

IT 9011-14-7, PMMA 9046-10-0, Polypropylene glycol bis(2-aminopropyl ether) 25322-69-4, Polypropylene glycol 106392-12-5, Ethylene oxide-propylene oxide block copolymer

RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(insulation films for semiconductor devices with good heat and moisture resistance and hydroxy group-containing polyamide varnishes for **manufacture**)

L30 ANSWER 27 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:650053 CAPLUS

DOCUMENT NUMBER: 137:186672

TITLE: Polyamide-based copolymers for insulator films, their coating varnishes, and porous insulator films thereof

INVENTOR(S): Saito, Hidenori; Enoki, Naoshi

PATENT ASSIGNEE(S): Sumitomo Bakelite Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 18 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002241503	A2	20020828	JP 2001-370655	20011204
PRIORITY APPLN. INFO.:			JP 2000-371396	A 20001206

AB The copolymers for giving **heat-resistant** insulator films in semiconductor devices, are obtained by reacting **polyamides** having repeating units $[\text{NHX}(\text{OR}_1)(\text{OR}_2)\text{NHCOR}_1\text{CO}]_m[\text{NHX}(\text{OR}_3)(\text{OR}_4)\text{NHCOR}_2\text{CO}]_n$ ($\text{R}_1\text{-R}_4 = \text{H}$, monovalent organic group; X = tetravalent aromatic group selected from described groups; Y_1, Y_2 = divalent group selected from described groups; $m > 0$; $n \geq 0$; $m + n = 2\text{-}1000$; $m/(m + n) = 0.05\text{-}1$) with reactive oligomers having norbornene structure and substitution groups reactive to CO_2H , NH_2 , or OH in the **polyamides**. The insulator films having micropores and **polybenzoxazole**-based structure are obtained by heating the varnishes containing the above copolymers and organic solvents for condensation or crosslinking. Thus, 2,2-bis(3-amino-4-hydroxyphenyl)hexafluoropropane was reacted with 4-ethynyl-2,6-naphthalenedicarboxylic acid chloride and then with 1-aminopropylnorbornene oligomer to give a copolymer, whose solution was

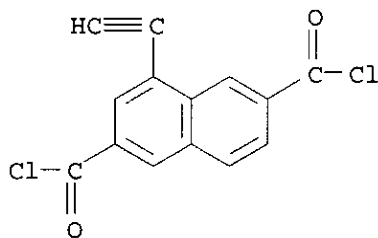
applied on a wafer and heated to give a porous film showing average pore diam 15 nm, glass transition temperature 542°, **dielec.** constant at 1 MHz 2.54, and water absorption 0.2%.

IT **450408-24-9DP**, reaction **products** with norbornene derivs.
 RL: CPS (Chemical process); IMF (**Industrial manufacture**); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); **PREP (Preparation)**; PROC (Process); USES (Uses)
 (polyamide-norbornene oligomer copolymers for porous insulator films with **polybenzoxazole** structure)
 RN 450408-24-9 CAPLUS
 CN 2,6-Naphthalenedicarbonyl dichloride, 4-ethynyl-, polymer with 3,3'-[9H-fluoren-9-ylidenebis(4,1-phenyleneoxy)]bis[6-aminophenol] (9CI)
 (CA INDEX NAME)

CM 1

CRN 405931-94-4

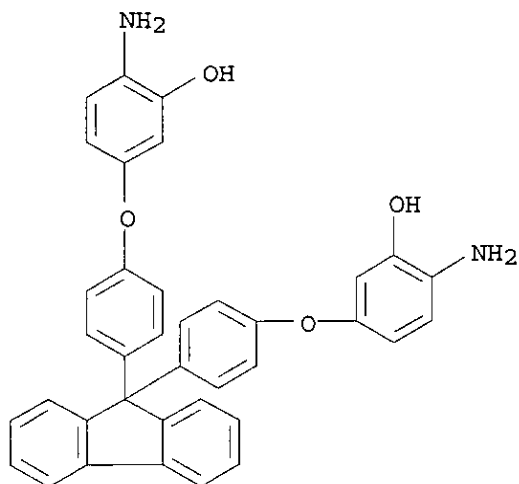
CMF C14 H6 Cl2 O2



CM 2

CRN 359642-31-2

CMF C37 H28 N2 O4



- IC ICM C08G081-00
ICS C08G069-48; C09D177-00; H01B003-30; H01L021-312
- CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 76
- ST bisaminohydroxyphenylhexafluoropropane ethynylnaphthalenedicarboxylic
chloride aminopropylnorbornene copolymer insulator; polyamide norbornene
oligomer copolymer insulator film; **polybenzoxazole** porous
insulator film polyamide copolymer varnish
- IT **Heat-resistant** materials
(films; polyamide-norbornene oligomer copolymers for porous insulator
films with **polybenzoxazole** structure)
- IT Films
(**heat-resistant**; polyamide-norbornene oligomer
copolymers for porous insulator films with **polybenzoxazole**
structure)
- IT **Polyamides**, processes
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical,
engineering or chemical process); PREP (Preparation); PROC (Process)
(norbornene-containing; polyamide-norbornene oligomer copolymers for porous
insulator films with **polybenzoxazole** structure)
- IT **Polybenzoxazoles**
RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(polyamide-; polyamide-norbornene oligomer copolymers for porous
insulator films with **polybenzoxazole** structure)
- IT **Dielectric** films
(polyamide-norbornene oligomer copolymers for porous insulator films
with **polybenzoxazole** structure)
- IT **Polyamides**, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(**polybenzoxazole**-; polyamide-norbornene oligomer copolymers
for porous insulator films with **polybenzoxazole** structure)
- IT 393543-10-7DP, reaction **products** with norbornene derivs.

393543-15-2DP, reaction **products** with norbornene derivs.
 450408-23-8DP, reaction **products** with norbornene derivs.
450408-24-9DP, reaction **products** with norbornene derivs.
 450408-25-0DP, reaction **products** with norbornene derivs.
 RL: CPS (Chemical process); IMF (**Industrial manufacture**); PEP
 (Physical, engineering or chemical process); TEM (Technical or engineered
 material use); PREP (**Preparation**); PROC (Process); USES (Uses)
 (polyamide-norbornene oligomer copolymers for porous insulator films
 with **polybenzoxazole** structure)

L30 ANSWER 28 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:592080 CAPLUS

DOCUMENT NUMBER: 137:141504

TITLE: **Heat-resistant** coating varnishes
 with low **dielectric** constant containing
polybenzoxazole precursors and their
 insulating films with micropores

INVENTOR(S): Saito, Hidenori; Enoki, Naoshi

PATENT ASSIGNEE(S): Sumitomo Bakelite Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 20 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002220564	A2	20020809	JP 2001-16404	20010124
PRIORITY APPLN. INFO.:			JP 2001-16404	20010124

AB The coating varnishes contain **polyamides** having
 $[NHX(OR1)(OR2)NHCOY1CO]_m[NHX(OR3)(OR4)NHCOY2CO]_n$ [$m > 0, n \geq 0, 2$
 $\leq (m + n) \leq 1000, 0.05 \leq m/(m + n) \leq 1$; R1-R4
 = H, monovalent organic group; X = benzenetetrayl, biphenyltetrayl, etc.,; Y1
 = divalent ethynyl-containing aromatic, ethynyl-containing aliphatic ring,
 biphenylene
 residue, tolan residue, etc.,; Y2 = benzenediyl, divalent substituted
 fluorene, etc.,], oligomers or polymers $(NHZNHCOY3CO)_o$ or $(OZO2CY3CO)_p$ ($o,$
 $p \geq 1$; Z = polyalkylene glycol residue; Y3 = divalent ethynyl-containing
 aromatic, ethynyl-containing aliphatic ring, biphenylene residue, tolan
 residue,
 fluorene residue, etc.,), and organic solvents. Thus,
polybenzoxazole precursor prepared from
 2,2-bis(3-amino-4-hydroxyphenyl)hexafluoropropane and 5-
 ethynylterephthaloyl chloride, an oligomeric material prepared
 from polypropylene glycol and isophthaloyl chloride, and
 N-methyl-2-pyrrolidone were filtrated through Teflon filter to give a
 coating varnish. The coating varnish was applied on a substrate and cured
 to give a **heat-resistant** film showing **dielec**
 . constant 2.3, $T_g > 450^\circ$, water absorption 0.3%, and micropore size
 ≤ 20 nm.

IT 444922-65-0P

RL: IMF (Industrial manufacture); POF (Polymer in formulation);
 RCT (Reactant); TEM (Technical or engineered material use); PREP
 (Preparation); RACT (Reactant or reagent); USES (Uses)
 (heat-resistant coating varnishes with low
 dielec. constant containing polybenzoxazole precursors and
 their insulating films with micropores)

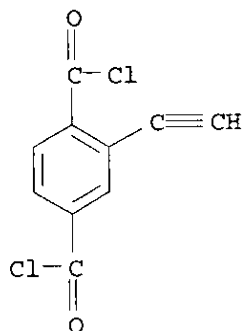
RN 444922-65-0 CAPLUS

CN 1,4-Benzenedicarbonyl dichloride, 2-ethynyl-, polymer with
 3,3'-[9H-fluoren-9-ylidenebis(4,1-phenyleneoxy)]bis[6-aminophenol] (9CI)
 (CA INDEX NAME)

CM 1

CRN 393543-09-4

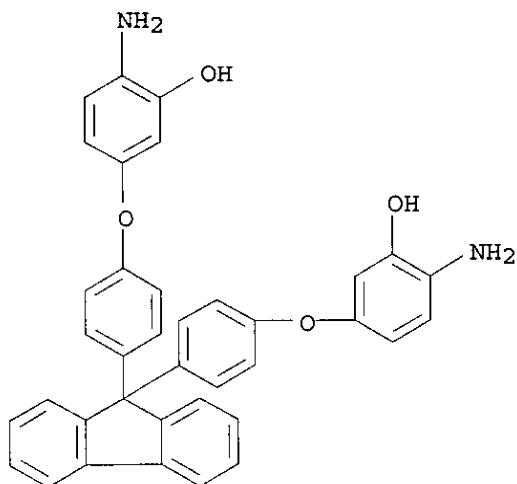
CMF C10 H4 Cl2 O2



CM 2

CRN 359642-31-2

CMF C37 H28 N2 O4



- IC ICM C09D177-00
ICS C08F299-02; C08G069-32; C08G073-22; C09D005-25; C09D167-02;
C09D171-00; H01B003-30
- CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 76
- ST coating insulating film **polybenzoxazole heat resistant**; isophthaloyl polypropylene glycol copolymer insulating film; polyamide micropore **polybenzoxazole** precursor insulating film
- IT **Heat-resistant materials**
(films; **heat-resistant** coating varnishes with low dielec. constant containing **polybenzoxazole** precursors and their insulating films with micropores)
- IT **Dielectric films**
(**heat-resistant** coating varnishes with low dielec. constant containing **polybenzoxazole** precursors and their insulating films with micropores)
- IT **Polyamides, uses**
RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(**heat-resistant** coating varnishes with low dielec. constant containing **polybenzoxazole** precursors and their insulating films with micropores)
- IT **Polybenzoxazoles**
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**heat-resistant** coating varnishes with low dielec. constant containing **polybenzoxazole** precursors and their insulating films with micropores)
- IT **Polymer blends**
RL: TEM (Technical or engineered material use); USES (Uses)
(**heat-resistant** coating varnishes with low dielec. constant containing **polybenzoxazole** precursors and

- their insulating films with micropores)
- IT Films
 (**heat-resistant; heat-resistant**
 coating varnishes with low **dielec.** constant containing
polybenzoxazole precursors and their insulating films with
 micropores)
- IT Polyethers, uses
 RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT
 (Reactant); TEM (Technical or engineered material use); PREP
 (Preparation); RACT (Reactant or reagent); USES (Uses)
 (polyamide-, aromatic, fluorene group-containing, cardo; **heat-**
resistant coating varnishes with low **dielec.** constant
 containing **polybenzoxazole** precursors and their insulating films
 with micropores)
- IT Polyoxyalkylenes, uses
 RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM
 (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (polyamide-; **heat-resistant** coating varnishes with
 low **dielec.** constant containing **polybenzoxazole**
 precursors and their insulating films with micropores)
- IT Cardo polymers
 RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT
 (Reactant); TEM (Technical or engineered material use); PREP
 (Preparation); RACT (Reactant or reagent); USES (Uses)
 (polyamide-polyethers, aromatic, fluorene group-containing; **heat-**
resistant coating varnishes with low **dielec.** constant
 containing **polybenzoxazole** precursors and their insulating films
 with micropores)
- IT Polyethers, uses
 RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM
 (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (**polybenzoxazole-**, cardo; **heat-resistant**
 coating varnishes with low **dielec.** constant containing
polybenzoxazole precursors and their insulating films with
 micropores)
- IT Cardo polymers
 RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM
 (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (**polybenzoxazole-polyether-**; **heat-resistant**
 coating varnishes with low **dielec.** constant containing
polybenzoxazole precursors and their insulating films with
 micropores)
- IT Polyoxyalkylenes, uses
 RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM
 (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (polyester-; **heat-resistant** coating varnishes with
 low **dielec.** constant containing **polybenzoxazole**
 precursors and their insulating films with micropores)
- IT Polyamides, uses
 RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT
 (Reactant); TEM (Technical or engineered material use); PREP
 (Preparation); RACT (Reactant or reagent); USES (Uses)

(polyether-, aromatic, fluorene group-containing, cardo; **heat-resistant** coating varnishes with low **dielec.** constant containing **polybenzoxazole** precursors and their insulating films with micropores)

IT **Polybenzoxazoles**

RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (polyether-, cardo; **heat-resistant** coating varnishes with low **dielec.** constant containing **polybenzoxazole** precursors and their insulating films with micropores)

IT **Polyamides, uses**

Polyesters, uses

RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (polyoxyalkylene-; **heat-resistant** coating varnishes with low **dielec.** constant containing **polybenzoxazole** precursors and their insulating films with micropores)

IT 393543-10-7P 444922-64-9P **444922-65-0P** 445041-09-8P
445041-18-9P

RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT (Reactant); TEM (Technical or engineered material use); **PREP** (Preparation); RACT (Reactant or reagent); USES (Uses) (**heat-resistant** coating varnishes with low **dielec.** constant containing **polybenzoxazole** precursors and their insulating films with micropores)

IT 85389-27-1P 444922-60-5P 444922-61-6P 444922-62-7P 444922-63-8P
444922-67-2P

RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (**heat-resistant** coating varnishes with low **dielec.** constant containing **polybenzoxazole** precursors and their insulating films with micropores)

L30 ANSWER 29 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:423001 CAPLUS

DOCUMENT NUMBER: 137:7182

TITLE: Heat- and water-resistant polyamide compositions and their porous **polybenzoxazole electric** insulator films

INVENTOR(S): Oki, Hiromi; Hase, Yoko; Enoki, Naoshi

PATENT ASSIGNEE(S): Sumitomo Bakelite Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

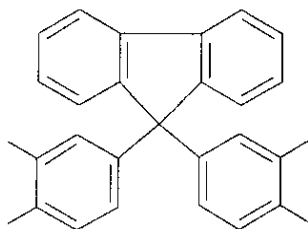
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

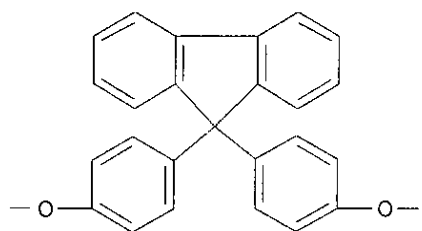
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002161204	A2	20020604	JP 2001-262440	20010830

PRIORITY APPLN. INFO.:
GI

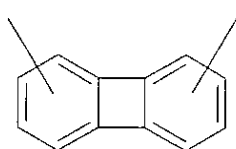
JP 2000-263323 A 20000831



I



II



III

AB The compns. comprise oligomers and **polyamides manufactured** from (A) diaminophenols $(H_2N)_2X(OH)_2$ [$X = 1,2,4,5$ -benzenetetrayl, 2,2',3,3'-biphenyltetrayl, QZQ, I; $Q = 1,3,4$ -benzenetriyl, $Z = O, SO_2, CMe_2, C(CF_3)_2$, phenylene, oxyphenylenoxy, II, etc.], (B) compds. having d-valent organic groups reactive to amino groups of A ($d = 3-10$), and (C) dicarboxylic acids HO_2CYCO_2H ($Y = III$, m-phenylene, p-phenylene, biphenylene, naphthalenediyl, etc.). Thus, 2,2-bis(3-amino-4-hydroxyphenyl)hexafluoropropane-2,6-biphenylene dicarboxylic acid chloride-isophthaloyl chloride-trimesic acid trichloride copolymer was mixed with polymethyl methacrylate and a solvent, applied on a glass plate, and heated to give a **polybenzoxazole** film showing pore size ≤ 5 nm, **dielec.** constant 2.4, T_g 414°, and water absorption 0.2%.

IT **433304-98-4P**, 9,9-Bis[4-(4-amino-3-hydroxyphenoxy)phenyl]fluorene-2,7-biphenylene dicarboxylic acid chloride-trimesic acid trichloride copolymer

RL: **IMF (Industrial manufacture)**; POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)

(polyamide compns. for heat- and water-resistant porous **polybenzoxazole elec.** insulator films)

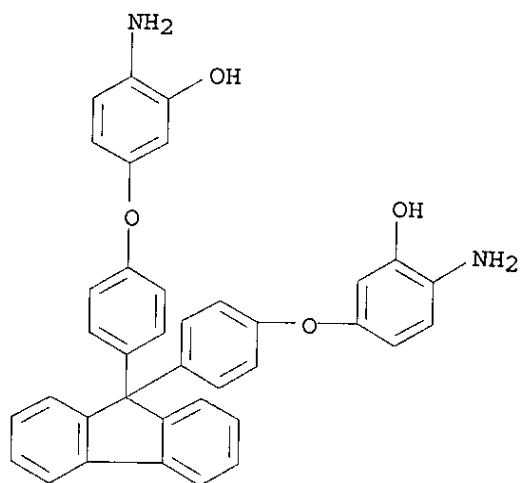
RN 433304-98-4 CAPLUS

CN 1,3,5-Benzenetricarbonyl trichloride, polymer with 2,7-biphenylenedicarbonyl dichloride and 3,3'-[9H-fluorene-9-ylidenebis(4,1-phenyleneoxy)]bis[6-aminophenol] (9CI) (CA INDEX NAME)

CM 1

CRN 359642-31-2

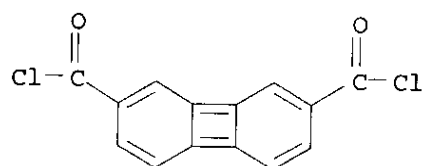
CMF C37 H28 N2 O4



CM 2

CRN 69417-81-8

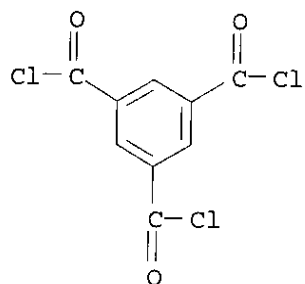
CMF C14 H6 Cl2 O2



CM 3

CRN 4422-95-1

CMF C9 H3 Cl3 O3



IC ICM C08L077-06
ICS C08G069-26; C08G073-22; C08L101-00; C09D005-25; C09D179-04;
H01L021-312

CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 76

ST **polybenzoxazole** porous insulator film **heat resistance**; polyamide **polybenzoxazole elec** insulator water resistance

IT Polycarbonates, uses
Polyoxyalkylenes, uses
Polyurethanes, uses
RL: NUU (Other use, unclassified); POF (Polymer in formulation); REM (Removal or disposal); PROC (Process); USES (Uses)
(heat-decomposed to form micropores; polyamide compns. for heat- and water-resistant porous **polybenzoxazole elec.** insulator films)

IT **Dielectric** films
(polyamide compns. for heat- and water-resistant porous **polybenzoxazole elec.** insulator films)

IT **Polybenzoxazoles**
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyamide compns. for heat- and water-resistant porous **polybenzoxazole elec.** insulator films)

IT **Polyamides**, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PREP (Preparation); USES (Uses)
(thermal ring closure for **polybenzoxazoles**; polyamide compns. for heat- and water-resistant porous **polybenzoxazole elec.** insulator films)

IT 9003-11-6, Ethylene oxide-propylene oxide copolymer 9003-53-6, Polystyrene 9011-14-7, Polymethyl methacrylate 25322-69-4, Polypropylene glycol 25718-55-2, Polyethylene carbonate 66536-59-2
RL: NUU (Other use, unclassified); POF (Polymer in formulation); REM (Removal or disposal); PROC (Process); USES (Uses)
(heat-decomposed to form micropores; polyamide compns. for heat- and water-resistant porous **polybenzoxazole elec.** insulator films)

IT 433304-97-3P, 2,2-Bis(3-amino-4-hydroxyphenyl)hexafluoropropane-2,6-biphenylene dicarboxylic acid chloride-isophthaloyl chloride-trimesic acid trichloride copolymer **433304-98-4P**, 9,9-Bis[4-(4-amino-3-hydroxyphenoxy)phenyl]fluorene-2,7-biphenylene dicarboxylic acid chloride-trimesic acid trichloride copolymer 433304-99-5P, 3,3',5,5'-Biphenyltetracarbonyl tetrachloride-2,2-bis(3-amino-4-hydroxyphenyl)hexafluoropropane-2,6-biphenylene dicarboxylic acid chloride-isophthaloyl chloride copolymer
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(polyamide compns. for heat- and water-resistant porous **polybenzoxazole elec.** insulator films)

L30 ANSWER 30 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:368077 CAPLUS

DOCUMENT NUMBER: 136:370772

TITLE: Polyamide compositions and **electrically**
insulating microporous film obtained from the
compositions for electronic devices

INVENTOR(S): Oki, Hiromi; Enoki, Naoshi; Hase, Yoko

PATENT ASSIGNEE(S): Sumitomo Bakelite Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

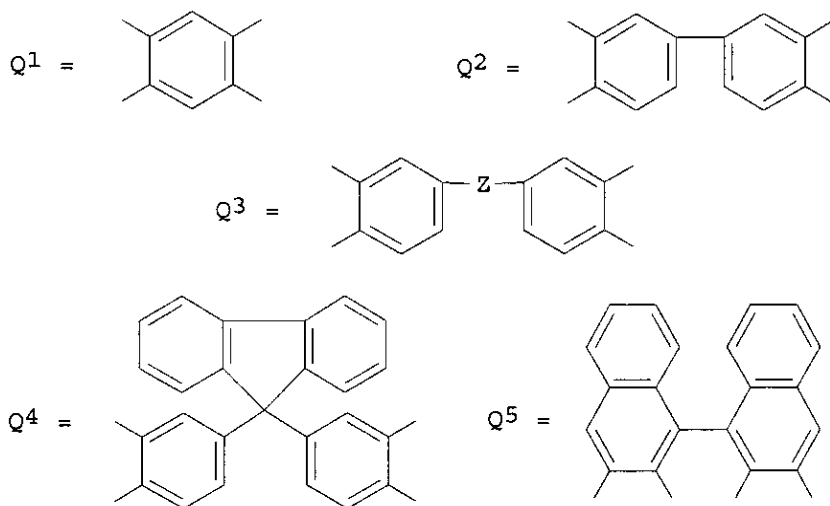
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
JP 2002141344	A2	20020517	JP 2000-331231	20001030
PRIORITY APPLN. INFO.:			JP 2000-331231	20001030

GI



AB The compns. contain (A) **polyamides** obtained by reaction of $H_2NX(OH)2NH_2$ [$X = Q^1-Q^5$; $Z = O, SO_2, CMe_2, C(CF_3)_2$, divalent aromatic substituents], compds. having d-valent amino-reactive organic groups ($d = 3-10$), HO_2CYCO_2H ($Y = 1,3$ -phenylene, $1,4$ -phenylene, biphenylene, $C_6H_4ZC_6H_4$, naphthylene), and $HO_2CC_6H_4C.tplbond.CC_6H_4CO_2H$, and (B) oligomers. The **elec.** insulating films have a microporous polymer layer with benzoxazole structure obtained by condensation and crosslinking of the above composition under heat. Thus, a varnish containing

100

parts polyamide [prepared from 2,2-bis(3-amino-4-hydroxyphenyl)hexafluoropropane, trimesic acid trichloride, isophthaloyl dichloride, and 4,4'-tolandicarboxylic acid dichloride] and 5 parts poly(Me methacrylate) in 195 parts NMP was applied on a glass sheet and heated at 70-420° for 4.5 h to give a 10- μ m microporous film with pore size ≤ 5 nm, dielec. constant 2.3, Tg 310°, and moisture absorption 0.3%.

IT 423754-47-6P 423754-48-7P

RL: IMF (Industrial manufacture); POF (Polymer in formulation);
TEM (Technical or engineered material use); PREP (Preparation);
USES (Uses)

(polyamide compns. for elec. insulating microporous films
with good heat and water resistance for electronic devices)

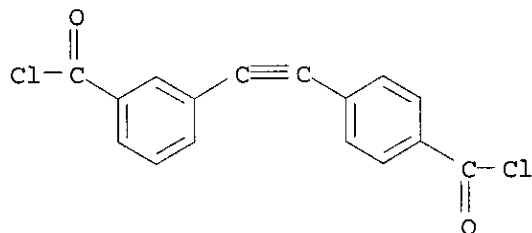
RN 423754-47-6 CAPLUS

CN 1,3,5-Benzenetricarbonyl trichloride, polymer with 1,3-benzenedicarbonyl dichloride, 3-[[4-(chlorocarbonyl)phenyl]ethynyl]benzoyl chloride and 3,3'-[9H-fluoren-9-ylidenebis(4,1-phenyleneoxy)]bis[6-aminophenol] (9CI) (CA INDEX NAME)

CM 1

CRN 393543-17-4

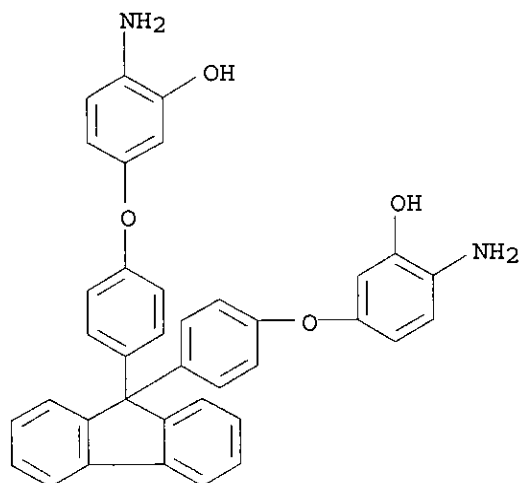
CMF C16 H8 Cl2 O2



CM 2

CRN 359642-31-2

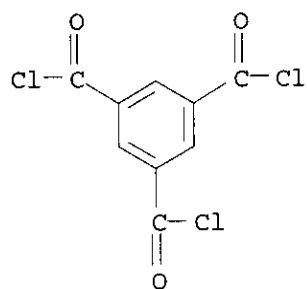
CMF C37 H28 N2 O4



CM 3

CRN 4422-95-1

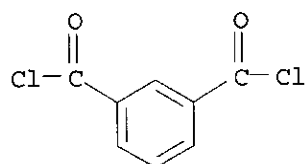
CMF C9 H3 Cl3 O3



CM 4

CRN 99-63-8

CMF C8 H4 Cl2 O2



RN 423754-48-7 CAPLUS

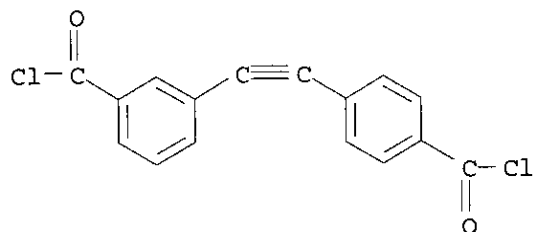
CN 1,3,5-Benzenetricarbonyl trichloride, polymer with 3-[[4-

(chlorocarbonyl)phenyl]ethynyl]benzoyl chloride and 3,3'-[9H-fluoren-9-ylidenebis(4,1-phenyleneoxy)]bis[6-aminophenol] (9CI) (CA INDEX NAME)

CM 1

CRN 393543-17-4

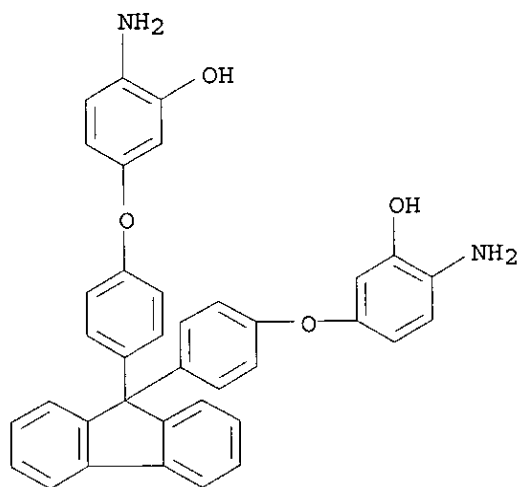
CMF C16 H8 Cl2 O2



CM 2

CRN 359642-31-2

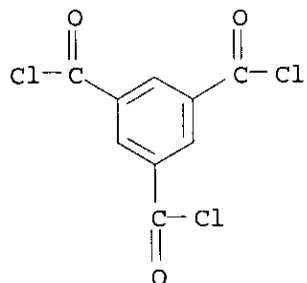
CMF C37 H28 N2 O4



CM 3

CRN 4422-95-1

CMF C9 H3 Cl3 O3



- IC ICM H01L021-312
ICS C08G073-10; C08L079-08; H01B003-30; H01L021-768
- CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 37, 76
- ST polyamide **polybenzoxazole** **elec** insulator film porous;
aminohydroxyphenyl fluoropropane isophthalate tolandicarboxylate trimesate
polymer insulator film; heat water resistance **dielec** film
polyamide **polybenzoxazole**
- IT Water-resistant materials
(**heat-resistant**; polyamide compns. for **elec**
. insulating microporous films with good heat and water resistance for
electronic devices)
- IT **Electric** insulators
(polyamide compns. for **elec.** insulating microporous films
with good heat and water resistance for electronic devices)
- IT Polyoxyalkylenes, uses
RL: MOA (Modifier or additive use); TEM (Technical or engineered material
use); USES (Uses)
(polyamide compns. for **elec.** insulating microporous films
with good heat and water resistance for electronic devices)
- IT **Polybenzoxazoles**
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyamide-; polyamide compns. for **elec.** insulating
microporous films with good heat and water resistance for electronic
devices)
- IT **Polyamides**, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(**polybenzoxazole**-; polyamide compns. for **elec.**
insulating microporous films with good heat and water resistance for
electronic devices)
- IT **Heat-resistant** materials
(water-resistant; polyamide compns. for **elec.** insulating
microporous films with good heat and water resistance for electronic
devices)
- IT 393543-19-6P 423754-46-5P **423754-47-6P 423754-48-7P**
RL: **IMF (Industrial manufacture)**; POF (Polymer in formulation);
TEM (Technical or engineered material use); **PREP (Preparation)**;
USES (Uses)

(polyamide compns. for **elec.** insulating microporous films
with good heat and water resistance for electronic devices)
IT 9003-11-6, Ethylene oxide-propylene oxide copolymer 9003-53-6,
Polystyrene 9011-14-7, Poly(methyl methacrylate) 25322-69-4,
Polypropylene oxide
RL: MOA (Modifier or additive use); TEM (Technical or engineered material
use); USES (Uses)
(polyamide compns. for **elec.** insulating microporous films
with good heat and water resistance for electronic devices)

L30 ANSWER 31 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:240862 CAPLUS

DOCUMENT NUMBER: 136:280417

TITLE: Polyamide-containing material for insulating film,
coating varnish for insulating film, and insulating
film and semiconductor device using the same
INVENTOR(S): Enoki, Takashi; Saito, Hidenori; Higashida, Nobuhiro;
Ishida, Yuichi

PATENT ASSIGNEE(S): Sumitomo Bakelite Company, Ltd., Japan

SOURCE: PCT Int. Appl., 64 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002024788	A1	20020328	WO 2001-JP8210	20010920
W: CN, KR, SG, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
JP 2002167442	A2	20020611	JP 2000-401237	20001228
JP 3492316	B2	20040203		
EP 1333050	A1	20030806	EP 2001-967765	20010920
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
US 2004002572	A1	20040101	US 2003-380872	20030319
PRIORITY APPLN. INFO.:			JP 2000-288271	A 20000922
			JP 2000-401237	A 20001228
			WO 2001-JP8210	W 20010920

AB The invention relates to a material for an insulating film, characterized
in that it comprises a copolymer **prepared** by reacting a HO-containing
polyamide having a specific structure (e.g., ethynyl) and a reactive
oligomer as a film forming component; a coating varnish for an insulating
film which comprises the material and an organic solvent; an insulating film,
characterized in that it comprises a layer of a resin having
polybenzoxazole as a primary structure which is **prepared**
by heating the material or the coating varnish to allow to undergo a
condensation reaction and a crosslinking reaction, and has micropores; and
a semiconductor device which has an inter-layer insulating film for
multi-layer wiring and/or a surface protecting layer comprising the

insulating film. The material for an insulating film is excellent in **elec.** characteristics, thermal characteristics, mech. characteristics and the like, and also can be used for **producing** an insulating film having a reduced **dielec.** constant Thus, adding 4-ethynyl-2,6-naphthalenedicarboxylic acid dichloride 27.7 to a solution of 2,2-bis(3-amino-4-hydroxyphenyl)hexafluoropropane 35.9 in dry N-methyl-2-pyrrolidone (330 mL) at 10°, after 1 h at 10°, mixing for 1 h at 20°, cooling back to 10°, adding Et3N 22.3, γ -butyrolactone (100 mL) and 4-aminobenzoate ester of a OH-terminated styrene oligomer (**preparation** given) 38.4 g, after 1 h at 10°, mixing for 1 h at 20° and working up gave a copolymer 5.00 g of which was dissolved in 20.00 g N-methyl-2-pyrrolidone, filtered, coated on an Al-deposited Si wafer and heated initially at 120° for 240 s then at 300° under an atmosphere containing <100 ppm O for 60 min, and at 400° for 60 min to decompose the oligomer unit to give a **polybenzoxazole** resin film with micro-pores, **dielec.** constant 2.1, and good resistance to heat and moisture.

IT 405931-98-8P 405932-05-0P 405932-06-1P

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyamide-containing material for insulating film, coating varnish for insulating film, and insulating film and semiconductor device using same)

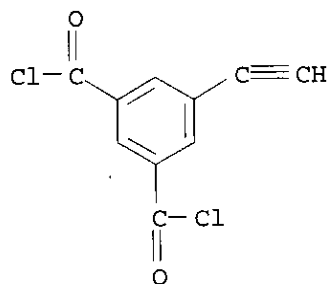
RN 405931-98-8 CAPLUS

CN 1,3-Benzenedicarbonyl dichloride, 5-ethynyl-, polymer with α -(2-aminopropyl)- ω -(2-aminopropoxy)poly[oxy(methyl-1,2-ethanediyl)] and 3,3'-[9H-fluoren-9-ylidenebis(4,1-phenyleneoxy)]bis[6-aminophenol], block (9CI) (CA INDEX NAME)

CM 1

CRN 393543-05-0

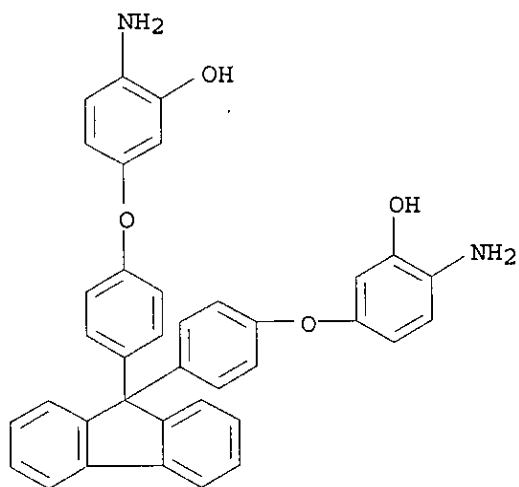
CMF C10 H4 Cl2 O2



CM 2

CRN 359642-31-2

CMF C37 H28 N2 O4

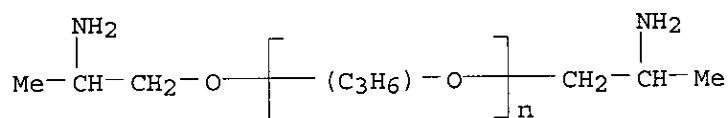


CM 3

CRN 26403-64-5

CMF (C3 H6 O)_n C6 H16 N2 O

CCI IDS, PMS



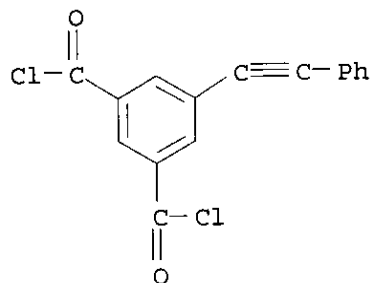
RN 405932-05-0 CAPLUS

CN 1,3-Benzenedicarbonyl dichloride, 5-ethynyl-, polymer with α -(2-aminopropyl)- ω -(2-aminopropoxy)poly[oxy(methyl-1,2-ethanediyl)], 1,3-benzenedicarbonyl dichloride, 3,3'-[9H-fluoren-9-ylidenebis(4,1-phenyleneoxy)]bis[6-aminophenol] and 5-(phenylethynyl)-1,3-benzenedicarbonyl dichloride, block (9CI) (CA INDEX NAME)

CM 1

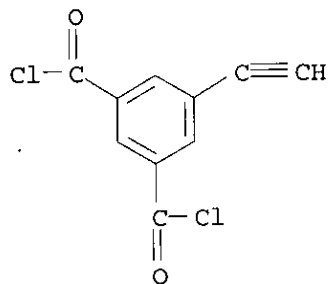
CRN 393543-14-1

CMF C16 H8 Cl2 O2



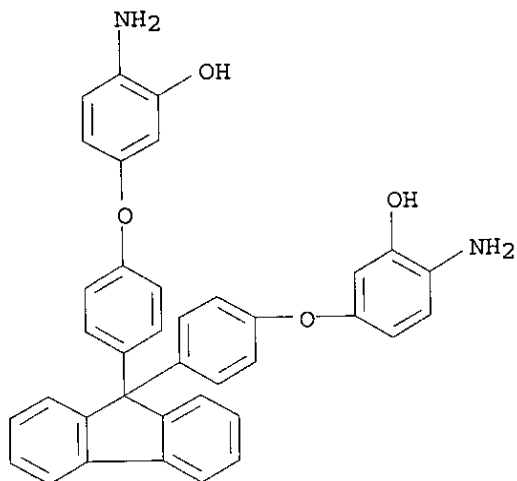
CM 2

CRN 393543-05-0
CMF C10 H4 Cl2 O2



CM 3

CRN 359642-31-2
CMF C37 H28 N2 O4

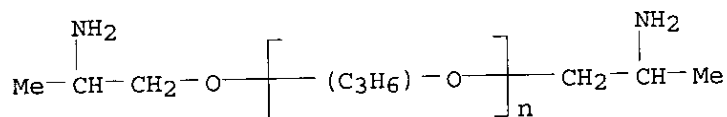


CM 4

CRN 26403-64-5

CMF (C3 H6 O)_n C6 H16 N2 O

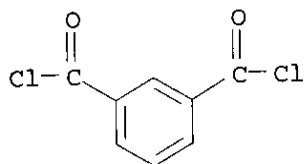
CCI IDS, PMS



CM 5

CRN 99-63-8

CMF C8 H4 Cl2 O2

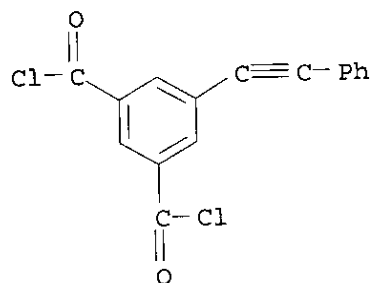


RN 405932-06-1 CAPLUS

CN 1,3-Benzenedicarbonyl dichloride, 5-ethynyl-, polymer with
 α -(2-aminopropyl)- ω -(2-aminopropoxy)poly[oxy(methyl-1,2-ethanediyl)], 3,3'-[9H-fluoren-9-ylidenebis(4,1-phenyleneoxy)]bis[6-aminophenol] and 5-(phenylethynyl)-1,3-benzenedicarbonyl dichloride, block
 (9CI) (CA INDEX NAME)

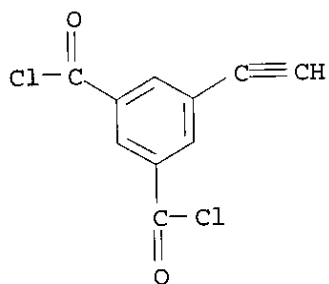
CM 1

CRN 393543-14-1
CMF C16 H8 Cl2 O2



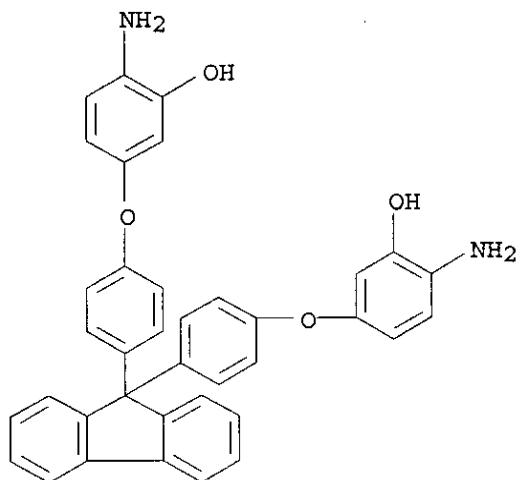
CM 2

CRN 393543-05-0
CMF C10 H4 Cl2 O2



CM 3

CRN 359642-31-2
CMF C37 H28 N2 O4

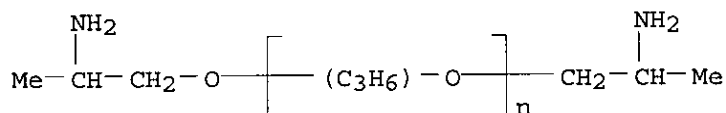


CM 4

CRN 26403-64-5

CMF (C3 H6 O)n C6 H16 N2 O

CCI IDS, PMS



IC ICM C08G081-00

ICS H01L021-312; H01L021-762; H05K003-28; H05K003-46

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 42, 76

ST low k material ethynyl naphthalenedicarboxylic acid polyamide
polybenzoxazole compn; semiconductor device dielec film

polybenzoxazole resin heat moisture resistance; aminobenzoate
ester styrene oligomer pore former low k material

IT Polyamides, uses

RL: IMF (Industrial manufacture); PRP (Properties); RCT (Reactant); TEM
(Technical or engineered material use); PREP (Preparation); RACT (Reactant
or reagent); USES (Uses)

(crosslinked; polyamide-containing material for insulating film, coating
varnish for insulating film, and insulating film and semiconductor
device using same)

IT Polybenzoxazoles

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or
engineered material use); PREP (Preparation); USES (Uses)

(crosslinked; polyamide-containing material for insulating film, coating
varnish for insulating film, and insulating film and semiconductor

- device using same)
- IT Polyoxyalkylenes, uses
 RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (polyamide-, block; polyamide-containing material for insulating film, coating varnish for insulating film, and insulating film and semiconductor device using same)
- IT **Dielectric** films
Heat-resistant materials
 Semiconductor devices
 Water-resistant materials
 (polyamide-containing material for insulating film, coating varnish for insulating film, and insulating film and semiconductor device using same)
- IT Polyoxyalkylenes, uses
 RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (polybenzoxazole-, block; polyamide-containing material for insulating film, coating varnish for insulating film, and insulating film and semiconductor device using same)
- IT **Polyamides**, uses
Polybenzoxazoles
 RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (polyoxyalkylene-, block; polyamide-containing material for insulating film, coating varnish for insulating film, and insulating film and semiconductor device using same)
- IT 16882-08-9P 23351-91-9P, 5-Bromoisophthalic acid 51760-21-5P, Dimethyl 5-bromoisophthalate 65235-38-3P 65235-40-7P 65235-41-8P
 168619-21-4P 217655-36-2P 393543-03-8P 393543-04-9P
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (intermediate; polyamide-containing material for insulating film, coating varnish for insulating film, and insulating film and semiconductor device using same)
- IT 16819-44-6P, 4,4'-Tolandicarboxylic acid dichloride 69417-81-8P, 2,7-Biphenylenedicarbonyl dichloride 393543-05-0P 393543-08-3P
 393543-14-1P 405931-94-4P
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (monomer; polyamide-containing material for insulating film, coating varnish for insulating film, and insulating film and semiconductor device using same)
- IT 405931-96-6P
 RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (polyamide-containing material for insulating film, coating varnish for insulating film, and insulating film and semiconductor device using same)
- IT 405931-95-5P, 2,2-Bis(3-amino-4-hydroxyphenyl)hexafluoropropane;4-ethynyl-2,6-naphthalenedicarboxylic acid dichloride;styrene block copolymer

405931-98-8P 405932-00-5P 405932-02-7P 405932-03-8P
 405932-04-9P 405932-05-0P 405932-06-1P 405932-07-2P
 405932-08-3P 405932-09-4P

RL: IMF (Industrial manufacture); PRP (Properties); TEM
 (Technical or engineered material use); PREP (Preparation); USES
 (Uses)

(polyamide-containing material for insulating film, coating varnish for
 insulating film, and insulating film and semiconductor device using
 same)

IT 122-04-3DP, 4-Nitrobenzoic acid chloride, ester **products** with
 hydroxy-terminated oligomers, reduction **product**

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
 (Reactant or reagent)

(polyamide-containing material for insulating film, coating varnish for
 insulating film, and insulating film and semiconductor device using
 same)

IT 7553-56-2, Iodine, reactions 7719-09-7, Thionyl chloride 10035-10-6,
 Hydrobromic acid, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)

(polyamide-containing material for insulating film, coating varnish for
 insulating film, and insulating film and semiconductor device using
 same)

IT 115-19-5, 3-Methyl-1-butyn-3-ol 358-23-6, Trifluoromethanesulfonic acid
 anhydride 13036-02-7, Dimethyl 5-hydroxyisophthalate

RL: RCT (Reactant); RACT (Reactant or reagent)

(reactant for monomer; polyamide-containing material for insulating film,
 coating varnish for insulating film, and insulating film and
 semiconductor device using same)

IT 99-31-0, 5-Aminoisophthalic acid 536-74-3, Phenylacetylene 619-42-1,
 Methyl 4-bromobenzoate 792-74-5, Dimethyl 4,4'-biphenyldicarboxylate
 3034-86-4, Methyl 4-ethynylbenzoate 9003-13-8, Polypropylene glycol
 monobutyl ether

RL: RCT (Reactant); RACT (Reactant or reagent)

(reactant; polyamide-containing material for insulating film, coating
 varnish for insulating film, and insulating film and semiconductor
 device using same)

IT 9003-53-6DP, Polystyrene, hydroxy-terminated, aminobenzoate esters

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
 (Reactant or reagent)

(reactive oligomer; polyamide-containing material for insulating film,
 coating varnish for insulating film, and insulating film and
 semiconductor device using same)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L30 ANSWER 32 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:90640 CAPLUS

DOCUMENT NUMBER: 136:135622

TITLE: Precursor of a **heat resistant**

resin, **heat resistant** resin,
 insulating film, and semiconductor device

INVENTOR(S): Okanuma, Masako; Yoshida, Tatsuhiro; Saito, Hidenori;

Higashida, Nobuhiro; Fujimoto, Masanori; Ishikawa, Tadahiro
 PATENT ASSIGNEE(S): Sumitomo Bakelite Company Ltd., Japan
 SOURCE: U.S. Pat. Appl. Publ., 23 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2002013443	A1	20020131	US 2001-818595	20010328
US 6518390	B2	20030211		
JP 2002167435	A2	20020611	JP 2000-401349	20001228
JP 3442049	B2	20030902		
WO 2002024785	A1	20020328	WO 2001-JP8209	20010920
W: CN, KR, SG				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
EP 1327653	A1	20030716	EP 2001-967764	20010920
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				

PRIORITY APPLN. INFO.:
 JP 2000-92260 A 20000329
 JP 2000-180506 A 20000615
 JP 2000-195184 A 20000628
 JP 2000-286525 A 20000921
 JP 2000-401349 A 20001218
 WO 2001-JP8209 W 20010920

AB A precursor of a **polybenzoxazole** resin comprises a crosslinking group in a mol. and has a specific structure is obtained by a condensation reaction and crosslinking reaction for **production** of an insulating film and a semiconductor device having an insulating interlayer film in multi-layer wiring or a film for protecting surfaces which comprises the above insulating film. The precursor exhibits excellent processability due to excellent solubility in solvents and, after ring closure, excellent heat stability in applications. The resin exhibits excellent **elec.**, phys. and mech. properties and is advantageously used for insulating interlayer films of semiconductor devices.

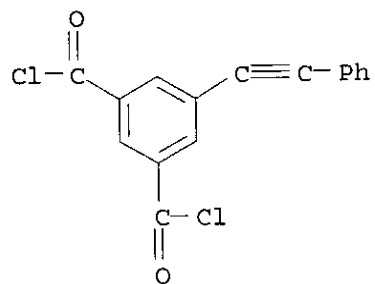
IT 393543-20-9P 393543-21-0P
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (precursor of a **heat resistant** resin, **heat resistant** resin, insulating film, and semiconductor device)

RN 393543-20-9 CAPLUS
 CN 1,3-Benzenedicarbonyl dichloride, 5-ethynyl-, polymer with 3,3'-(9H-fluoren-9-ylidene)bis[6-aminophenol] and 5-(phenylethynyl)-1,3-benzenedicarbonyl dichloride (9CI) (CA INDEX NAME)

CM 1

CRN 393543-14-1

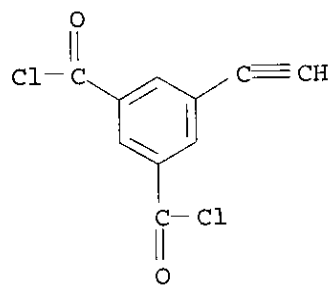
CMF C16 H8 Cl2 O2



CM 2

CRN 393543-05-0

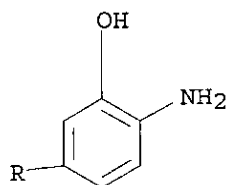
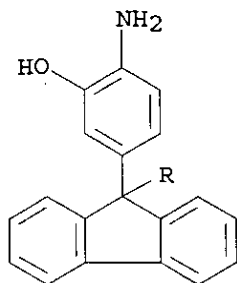
CMF C10 H4 Cl2 O2



CM 3

CRN 152480-72-3

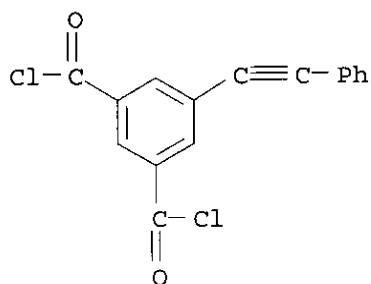
CMF C25 H20 N2 O2



RN 393543-21-0 CAPLUS
 CN 1,3-Benzenedicarbonyl dichloride, 5-(phenylethynyl)-, polymer with
 1,4-benzenedicarbonyl dichloride, 2-ethynyl-1,4-benzenedicarbonyl
 dichloride and 3,3'-(9H-fluoren-9-ylidene)bis[6-aminophenol] (9CI) (CA
 INDEX NAME)

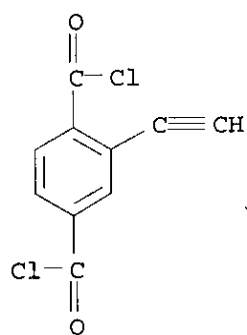
CM 1

CRN 393543-14-1
 CMF C16 H8 Cl2 O2



CM 2

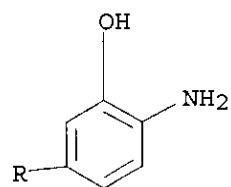
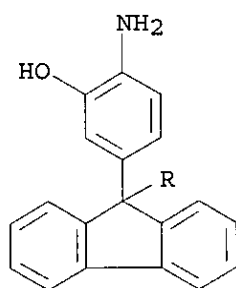
CRN 393543-09-4
 CMF C10 H4 Cl2 O2



CM 3

CRN 152480-72-3

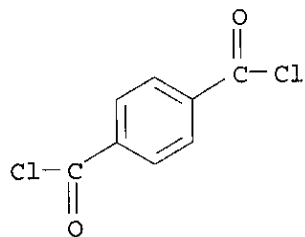
CMF C25 H20 N2 O2



CM 4

CRN 100-20-9

CMF C8 H4 Cl2 O2



IC ICM C08G018-00
 NCL 528044000
 CC 37-6 (Plastics Manufacture and Processing)
 Section cross-reference(s): 38, 76
 ST **polybenzoxazole heat resistant insulating**
 film semiconductor
 IT **Polyamides, preparation**
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
 (Reactant or reagent)
 (fluorine-containing, **preparation**, ring closure and crosslinking,
 precursor; precursor of a **heat resistant** resin,
heat resistant resin, insulating film, and
 semiconductor device)
 IT **Polybenzoxazoles**
 RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or
 engineered material use); PREP (Preparation); USES (Uses)
 (fluorine-containing; precursor of a **heat resistant**
 resin, **heat resistant** resin, insulating film, and
 semiconductor device)
 IT Fluoropolymers, **preparation**
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
 (Reactant or reagent)
 (polyamide-, **preparation**, ring closure and crosslinking,
 precursor; precursor of a **heat resistant** resin,
heat resistant resin, insulating film, and
 semiconductor device)
 IT Fluoropolymers, **preparation**
 RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or
 engineered material use); PREP (Preparation); USES (Uses)
 (**polybenzoxazole**-; precursor of a **heat**
resistant resin, **heat resistant** resin,
 insulating film, and semiconductor device)
 IT **Electric insulators**
Heat-resistant materials
 Semiconductor devices
 (precursor of a **heat resistant** resin, **heat**
resistant resin, insulating film, and semiconductor device)
 IT **Polybenzoxazoles**
 RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or
 engineered material use); PREP (Preparation); USES (Uses)
 (precursor of a **heat resistant** resin, **heat**

- resistant** resin, insulating film, and semiconductor device)
- IT 792-74-5, Dimethyl 4,4'-biphenyldicarboxylate
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (iodation; precursor of a **heat resistant** resin,
heat resistant resin, insulating film, and
 semiconductor device)
- IT 3034-86-4P, Methyl 4-ethynylbenzoate 16819-43-5P, 4,4'-Tolandicarboxylic
 acid 16819-44-6P, 4,4'-Tolandicarboxylic acid dichloride 16882-08-9P
 23351-91-9P, 5-Bromoisophthalic acid 51760-21-5P, Dimethyl
 5-bromoisophthalate 65235-38-3P 65235-40-7P 65235-41-8P
 168619-21-4P 217655-36-2P 393543-03-8P 393543-04-9P 393543-05-0P
 393543-08-3P
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
 (Reactant or reagent)
 (precursor of a **heat resistant** resin, **heat**
resistant resin, insulating film, and semiconductor device)
- IT 382608-43-7P 382608-44-8P 393543-10-7P 393543-12-9P 393543-13-0P
 393543-15-2P 393543-16-3P 393543-18-5P 393543-19-6P
 393543-20-9P 393543-21-0P 393543-22-1P 393543-23-2P
 393543-24-3P 393543-25-4P 393543-26-5P 393543-27-6P 393543-28-7P
 393543-29-8P 393588-31-3P 393588-33-5P 393588-40-4P 393588-41-5P
 RL: IMF (Industrial manufacture); TEM (Technical or engineered
 material use); PREP (Preparation); USES (Uses)
 (precursor of a **heat resistant** resin, **heat**
resistant resin, insulating film, and semiconductor device)
- IT 99-31-0, 5-Aminoisophthalic acid 115-19-5, 3-Methyl-1-butyn-3-ol
 536-74-3, Phenylacetylene 619-42-1, Methyl 4-bromobenzoate 7719-09-7,
 Thionyl chloride 10035-10-6, Hydrobromic acid, reactions 62480-31-3
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (precursor of a **heat resistant** resin, **heat**
resistant resin, insulating film, and semiconductor device)
- IT 13036-02-7, Dimethyl 5-hydroxyisophthalate
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (sulfonation; precursor of a **heat resistant** resin,
heat resistant resin, insulating film, and
 semiconductor device)

L30 ANSWER 33 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:444556 CAPLUS

DOCUMENT NUMBER: 135:33974

TITLE: **Polybenzoxazole** resins and their precursors
 with good thermal and **electric**
 characteristics and low water absorption

INVENTOR(S): Higashida, Yukihiro; Enoki, Hisashi

PATENT ASSIGNEE(S): Sumitomo Bakelite Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

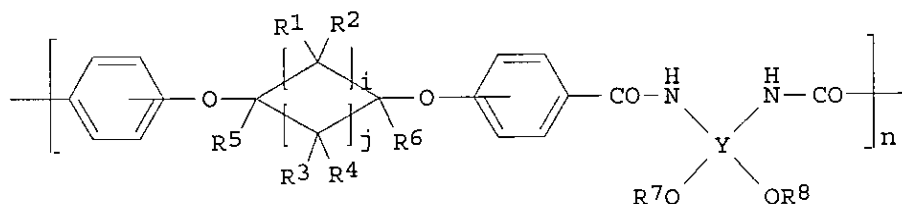
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001163976	A2	20010619	JP 1999-346182	19991206
PRIORITY APPLN. INFO.:			JP 1999-346182	19991206

GI



I

AB The resins useful for interlayer **dielec.** films in semiconductor devices, solder resist films, liquid-crystalline orientation films, etc., are obtained by dehydrating and ring-closing the precursors having repeating unit I ($n = 1-1000$; $R1-6 = F$, fluoroalkyl; $R7, R8 = H$, monovalent organic group; $i = 1-8$; $j = 0-7$; $i + j \leq 8$; $Y =$ tetravalent aromatic group). Thus, a varnish of a precursor **prepared** from 2,2-bis(3-amino-4-hydroxyphenyl)hexafluoropropane and chloride of $A(O-p-C_6H_4CO_2H)_2$ ($A =$ hexafluorocyclobutane residue) was applied on a plate and dried to give a precursor film, which was peeled from the plate and heated to give a **polybenzoxazole** film showing **dielec.** constant 2.3, good **heat resistance**, and water absorption 0.1%.

IT 343943-93-1P 343944-00-3P 343944-07-0P

RL: **IMF** (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); **PREP** (Preparation); **USES** (Uses)

(**polybenzoxazole** resins and their precursors with good thermal and **elec.** characteristics and low water absorption)

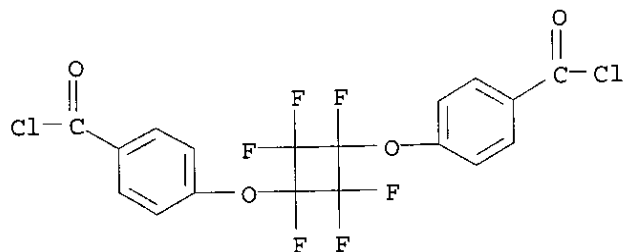
RN 343943-93-1 CAPLUS

CN Benzoyl chloride, 4,4'-[(1,2,2,3,4,4-hexafluoro-1,3-cyclobutanediyl)bis(oxy)]bis-, polymer with 4,4'-diamino[1,1'-biphenyl]-3,3'-diol (9CI) (CA INDEX NAME)

CM 1

CRN 343943-89-5

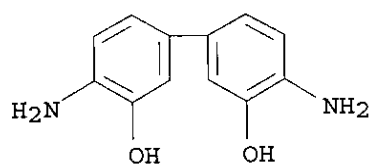
CMF C18 H8 Cl2 F6 O4



CM 2

CRN 2373-98-0

CMF C12 H12 N2 O2



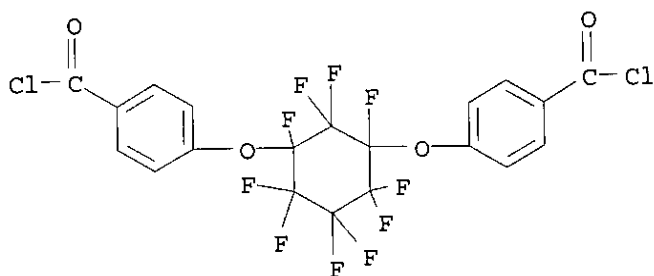
RN 343944-00-3 CAPLUS

CN Benzoyl chloride, 4,4'-[(1,2,2,3,4,4,5,5,6,6-decafluoro-1,3-cyclohexanediyl)bis(oxy)]bis-, polymer with 4,4'-diamino[1,1'-biphenyl]-3,3'-diol (9CI) (CA INDEX NAME)

CM 1

CRN 343943-96-4

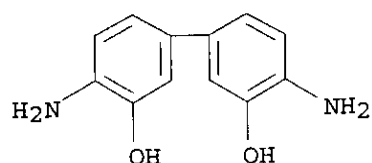
CMF C20 H8 C12 F10 O4



CM 2

CRN 2373-98-0

CMF C12 H12 N2 O2



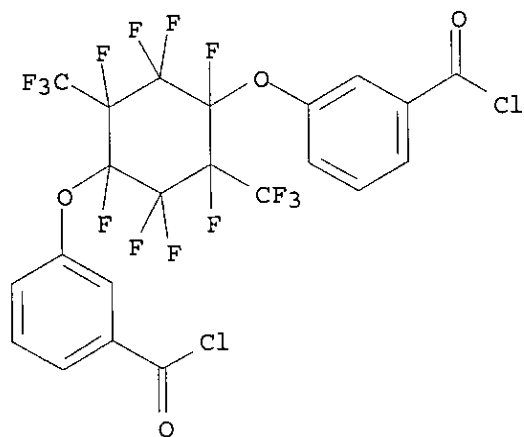
RN 343944-07-0 CAPLUS

CN Benzoyl chloride, 3,3'-[[1,2,2,3,4,5,5,6-octafluoro-3,6-bis(trifluoromethyl)-1,4-cyclohexanediyl]bis(oxy)]bis-, polymer with 4,4'-diamino[1,1'-biphenyl]-3,3'-diol (9CI) (CA INDEX NAME)

CM 1

CRN 343944-03-6

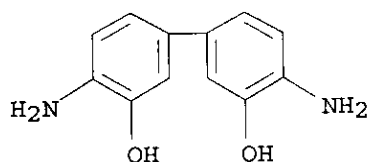
CMF C22 H8 Cl2 F14 O4



CM 2

CRN 2373-98-0

CMF C12 H12 N2 O2



IT 343943-95-3P 343944-02-5P 343944-09-2P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP

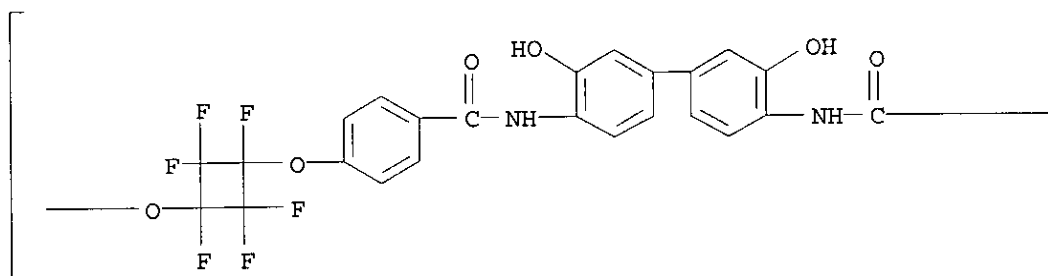
(Preparation); RACT (Reactant or reagent)

(polybenzoxazole resins and their precursors with good thermal and elec. characteristics and low water absorption)

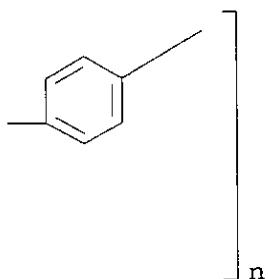
RN 343943-95-3 CAPLUS

CN Poly[oxy(1,2,2,3,4,4-hexafluoro-1,3-cyclobutanediyl)oxy-1,4-phenylenecarbonylimino(3,3'-dihydroxy[1,1'-biphenyl]-4,4'-diyl)iminocarbonyl-1,4-phenylene] (9CI) (CA INDEX NAME)

PAGE 1-A



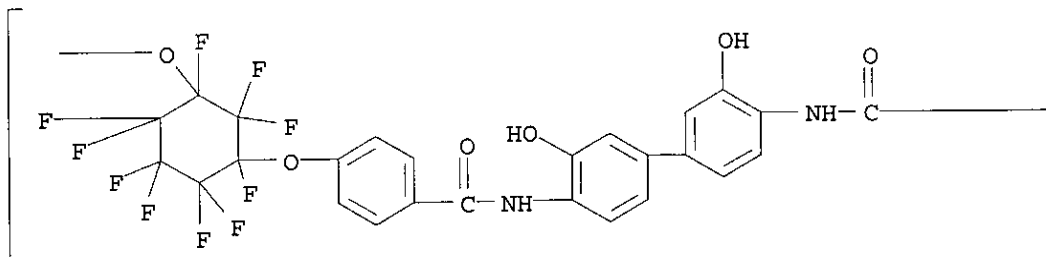
PAGE 1-B



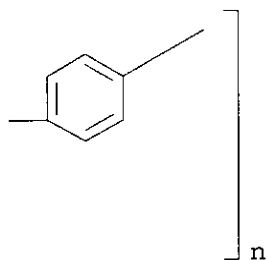
RN 343944-02-5 CAPLUS

CN Poly[oxy(1,2,2,3,4,4,5,5,6,6-decafluoro-1,3-cyclohexanediyl)oxy-1,4-phenylenecarbonylimino(3,3'-dihydroxy[1,1'-biphenyl]-4,4'-diyl)iminocarbonyl-1,4-phenylene] (9CI) (CA INDEX NAME)

PAGE 1-A

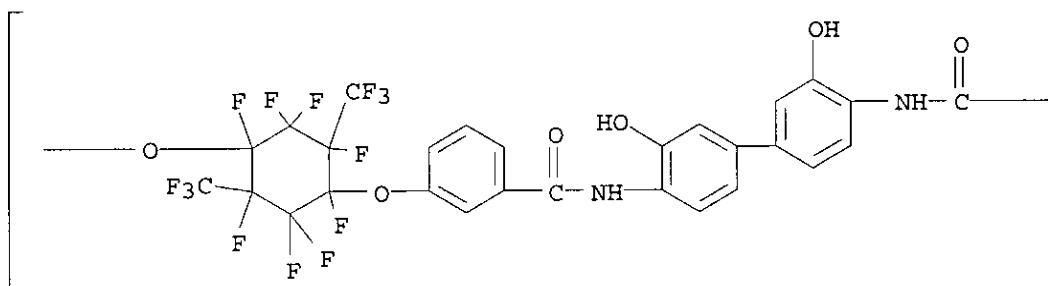


PAGE 1-B

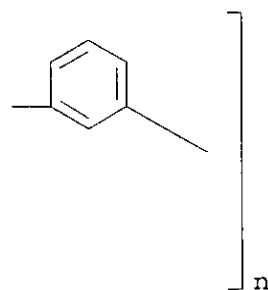


RN 343944-09-2 CAPLUS
 CN Poly[oxy[1,2,2,3,4,5,5,6-octafluoro-3,6-bis(trifluoromethyl)-1,4-cyclohexanediyl]oxy-1,3-phenylenecarbonylimino(3,3'-dihydroxy[1,1'-biphenyl]-4,4'-diyl)iminocarbonyl-1,3-phenylene] (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



IC ICM C08G073-22
 ICS H01B003-30
 CC 37-3 (Plastics Manufacture and Processing)
 Section cross-reference(s): 38, 76
 ST precursor **polybenzoxazole dielec film heat resistance**; bisaminohydroxyphenylhexafluoropropane

- polybenzoxazole dielec film; arom polyamide precursor fluoro polybenzoxazole polyether**
- IT **Heat-resistant materials**
(films; **polybenzoxazole** resins and their precursors with good thermal and **elec.** characteristics and low water absorption)
- IT **Films**
(**heat-resistant**; **polybenzoxazole** resins and their precursors with good thermal and **elec.** characteristics and low water absorption)
- IT **Polyethers, preparation**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(polyamide-, aromatic, fluorine-containing; **polybenzoxazole** resins and their precursors with good thermal and **elec.** characteristics and low water absorption)
- IT **Dielectric films**
(**polybenzoxazole** resins and their precursors with good thermal and **elec.** characteristics and low water absorption)
- IT **Polyethers, preparation**
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**polybenzoxazole**-, fluorine-containing; **polybenzoxazole** resins and their precursors with good thermal and **elec.** characteristics and low water absorption)
- IT **Fluoropolymers, preparation**
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**polybenzoxazole**-polyether-; **polybenzoxazole** resins and their precursors with good thermal and **elec.** characteristics and low water absorption)
- IT **Polyamides, preparation**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(polyether-, aromatic, fluorine-containing; **polybenzoxazole** resins and their precursors with good thermal and **elec.** characteristics and low water absorption)
- IT **Polybenzoxazoles**
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-, fluorine-containing; **polybenzoxazole** resins and their precursors with good thermal and **elec.** characteristics and low water absorption)
- IT 343943-90-8P 343943-91-9P 343943-93-1P 343943-94-2P
343943-97-5P 343943-98-6P 343944-00-3P 343944-01-4P
343944-04-7P 343944-05-8P 343944-07-0P 343944-08-1P
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**polybenzoxazole** resins and their precursors with good thermal and **elec.** characteristics and low water absorption)
- IT 343943-89-5P 343943-92-0P 343943-95-3P 343943-96-4P
343943-99-7P 343944-02-5P 343944-03-6P 343944-06-9P

343944-09-2P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(polybenzoxazole resins and their precursors with good thermal and elec. characteristics and low water absorption)

L30 ANSWER 34 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:129745 CAPLUS

DOCUMENT NUMBER: 134:179659

TITLE: Heat-resistant resin compositions
with improved adhesion with substrates

INVENTOR(S): Okuda, Yoshiharu; Tomikawa, Masao; Fujita, Yoji

PATENT ASSIGNEE(S): Toray Industries, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 16 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001049119	A2	20010220	JP 1999-227814	19990811
PRIORITY APPLN. INFO.:			JP 1999-227814	19990811

AB The compns. useful for interlayer insulating films and surface protective films for semiconductor devices contain **heat-resistant** resins or their precursors, solvents, and 1-10% (based on the resins) silicone diamines. Thus, stirring 4,4'-diaminodiphenyl ether 19.0, 1,3-bis(3-aminopropyl)tetramethyldisiloxane (I) 1.2, pyromellitic anhydride 10.9, and 3,3',4,4'-benzophenonetetracarboxylic acid dianhydride 15.0 g in NMP gave a polyamic acid, which was mixed with N,N-dimethylaminoethyl methacrylamide 26, ethylene glycol dimethacrylate 5, N-phenylglycine 2.5, 3,3'-carbonylbis(7-diethylaminocoumarin) 0.2, and I 0.9 g to give a photosensitive varnish. The varnish was applied on a silicone wafer and cured to give a film showing no peeling after heating.

IT 326595-32-8P

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(heat-resistant resin compns. with good adhesion for semiconductor devices)

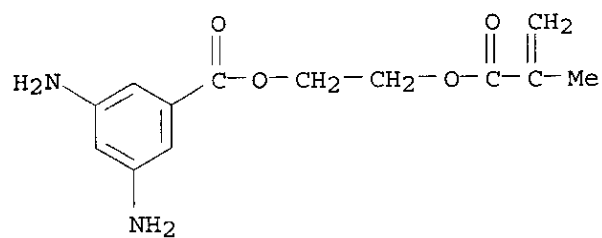
RN 326595-32-8 CAPLUS

CN Benzoic acid, 3,5-diamino-, 2-[(2-methyl-1-oxo-2-propenyl)oxy]ethyl ester, polymer with 1H,3H-benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, 1,2-ethanediyl bis(2-methyl-2-propenoate) and 3,3'-(1,1,3,3-tetramethyl-1,3-disiloxanediyl)bis[1-propanamine] (9CI) (CA INDEX NAME)

CM 1

CRN 76067-81-7

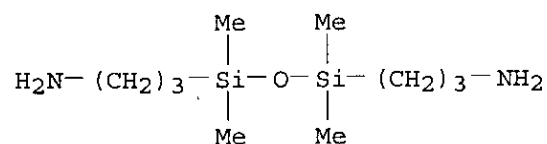
CMF C13 H16 N2 O4



CM 2

CRN 2469-55-8

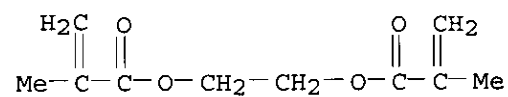
CMF C10 H28 N2 O Si2



CM 3

CRN 97-90-5

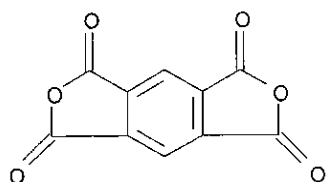
CMF C10 H14 O4



CM 4

CRN 89-32-7

CMF C10 H2 O6



IC ICM C08L079-08

- ICS C08K005-544; G03F007-022; G03F007-037; H01L021-312
- CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 76
- ST polyimide precursor polyamic acid **heat resistance**;
adhesion improver siloxane diamine polyimide; **elec** insulator
heat resistance polyimide; photosensitive **heat**
resistance resin; semiconductor **heat resistance**
interlayer insulating film
- IT **Heat-resistant materials**
(films; **heat-resistant** resin compns. with good
adhesion for semiconductor devices)
- IT Adhesion promoters
Electric insulators
Heat-resistant materials
Semiconductor devices
(**heat-resistant** resin compns. with good adhesion
for semiconductor devices)
- IT **Polybenzoxazoles**
Polyimides, uses
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or
engineered material use); PREP (Preparation); USES (Uses)
(**heat-resistant** resin compns. with good adhesion
for semiconductor devices)
- IT Polyamic acids
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(**heat-resistant** resin compns. with good adhesion
for semiconductor devices)
- IT Films
(**heat-resistant**; **heat-resistant**
resin compns. with good adhesion for semiconductor devices)
- IT **Polyamides, preparation**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(polyhydroxy-; **heat-resistant** resin compns. with
good adhesion for semiconductor devices)
- IT 98-59-9DP, p-Toluenesulfonyl chloride, reaction **products** with
1,3-bis(3-aminopropyl)tetramethyldisiloxane 110-16-7DP, Maleic acid,
reaction **products** with 1,3-bis(3-aminopropyl)tetramethyldisiloxa
ne 2469-55-8DP, 1,3-Bis(3-aminopropyl)tetramethyldisiloxane, reaction
products with toluenesulfonyl chloride
RL: IMF (Industrial manufacture); MOA (Modifier or additive use); PREP
(Preparation); USES (Uses)
(**heat-resistant** resin compns. with good adhesion
for semiconductor devices)
- IT 211873-94-8P 236095-20-8P 326595-30-6P 326595-31-7P
326595-32-8P 326595-33-9P 326595-34-0P
RL: IMF (Industrial manufacture); PRP (Properties); TEM
(Technical or engineered material use); PREP (Preparation); USES
(Uses)
(**heat-resistant** resin compns. with good adhesion
for semiconductor devices)

IT 2469-55-8, 1,3-Bis(3-aminopropyl)tetramethyldisiloxane
 RL: MOA (Modifier or additive use); USES (Uses)
 (**heat-resistant** resin compns. with good adhesion
 for semiconductor devices)

IT 83558-87-6, 2,2-Bis(3-amino-4-hydroxyphenyl)hexafluoropropane
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (**heat-resistant** resin compns. with good adhesion
 for semiconductor devices)

L30 ANSWER 35 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:36912 CAPLUS

DOCUMENT NUMBER: 134:101643

TITLE: **Heat-resistant** resin or precursor
 compositions containing photopolymerable compounds for
electric insulators

INVENTOR(S): Eguchi, Toshimasa; Murata, Mitsuru; Enoki, Hisashi

PATENT ASSIGNEE(S): Sumitomo Bakelite Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001011181	A2	20010116	JP 1999-189108	19990702
PRIORITY APPLN. INFO.:			JP 1999-189108	19990702

AB The composition, useful as **elec.** insulators with good heat and
elec. characteristics for **electricity** and electronic
 equipment and semiconductor devices, comprises (A) a photopolymerable
 functional group-containing compound, and (B) a **heat-resistant**
 resin or its precursor, wherein glass transition temperature of the resin is
 higher than thermal decomposition temperature of polymerized A. Thus, 10
 parts polyimide
 (Tg 335°) **prepared** from 2,2-bis(4-(4,4'-
 aminophenoxy)phenyl)hexafluoropropane 5.18, 2,2'-bis(trifluoromethyl)-4,4'-
 diaminobiphenyl 9.60, pyromellitic dianhydride 2.94, and
 hexafluoroisopropylidene-2,2-bis(phthalic anhydride) 13.32 parts was mixed
 with poly(ethylene glycol) dimethacrylate 5.0 and benzophenone 0.02 parts
 was spin-coated onto a silicon wafer having a tantalum layer,
 UV-irradiated and heat cured to give a 0.8 μ m-thick film showing
dielec. const.2.4.

IT 295358-48-4P
 RL: IMF (Industrial manufacture); POF (Polymer in formulation);
 TEM (Technical or engineered material use); PREP (Preparation);
 USES (Uses)
 (**heat-resistant** polyimide or
polybenzoxazole compns. containing photopolymerable compds. for
elec. insulators)

RN 295358-48-4 CAPLUS

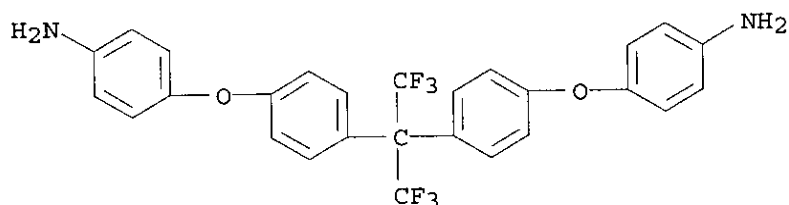
CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with

2,2'-bis(trifluoromethyl) [1,1'-biphenyl]-4,4'-diamine,
 5,5'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[1,3-
 isobenzofurandione] and 4,4'-[[2,2,2-trifluoro-1-
 (trifluoromethyl)ethylidene]bis(4,1-phenyleneoxy)]bis[benzenamine] (9CI)
 (CA INDEX NAME)

CM 1

CRN 69563-88-8

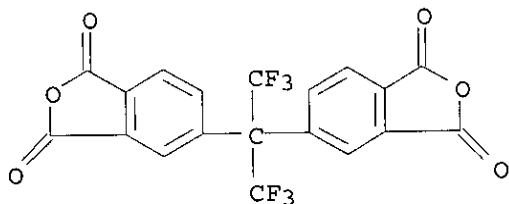
CMF C27 H20 F6 N2 O2



CM 2

CRN 1107-00-2

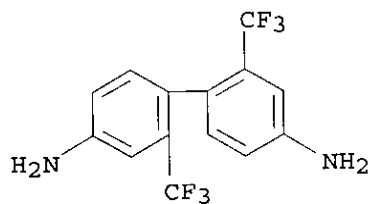
CMF C19 H6 F6 O6



CM 3

CRN 341-58-2

CMF C14 H10 F6 N2



- IT Polymer blends
RL: TEM (Technical or engineered material use); USES (Uses)
(**heat-resistant** polyimide or
polybenzoxazole compns. containing photopolymerable compds. for
elec. insulators)
- IT Polyethers, **preparation**
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyamic acid-, fluorine-containing; **heat-resistant**
polyimide or **polybenzoxazole** compns. containing photopolymerable
compds. for **elec.** insulators)
- IT Fluoropolymers, **preparation**
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyamic acid-polyether-; **heat-resistant** polyimide
or **polybenzoxazole** compns. containing photopolymerable compds.
for **elec.** insulators)
- IT Fluoropolymers, **preparation**
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyamide-, hydroxy-containing; **heat-resistant**
polyimide or **polybenzoxazole** compns. containing photopolymerable
compds. for **elec.** insulators)
- IT Fluoropolymers, **preparation**
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(**polybenzoxazole**-; **heat-resistant**
polyimide or **polybenzoxazole** compns. containing photopolymerable
compds. for **elec.** insulators)
- IT Polyamic acids
Polyimides, **preparation**
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-, fluorine-containing; **heat-resistant**
polyimide or **polybenzoxazole** compns. containing photopolymerable
compds. for **elec.** insulators)
- IT Fluoropolymers, **preparation**
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-polyimide-; **heat-resistant** polyimide or
polybenzoxazole compns. containing photopolymerable compds. for
elec. insulators)
- IT Polyethers, **preparation**
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyimide-, fluorine-containing; **heat-resistant**
polyimide or **polybenzoxazole** compns. containing photopolymerable
compds. for **elec.** insulators)
- IT Fluoropolymers, **preparation**
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyimide-; **heat-resistant** polyimide or
polybenzoxazole compns. containing photopolymerable compds. for
elec. insulators)

polybenzoxazole compns. containing photopolymerable compds. for
elec. insulators)

IT 9043-05-4P, 4,4'-Diaminodiphenyl ether-pyromellitic dianhydride copolymer,
polyamic acid SRU 9051-34-7P, Polyethylene glycol dimethacrylate
homopolymer 25036-53-7P, 4,4'-Diaminodiphenyl ether-pyromellitic
dianhydride copolymer, polyimide sru 25038-81-7P, 4,4'-Diaminodiphenyl
ether-pyromellitic dianhydride copolymer 54002-11-8P 69067-16-9P
112480-81-6P, 2,2-Bis(3-amino-4-hydroxyphenyl)hexafluoropropane-4,4'-
hexafluoroisopropylidene diphenyl-1,1'-dicarboxylic dichloride copolymer,
polybenzoxazole SRU 112513-26-5P 262352-93-2P 262352-94-3P
262352-95-4P 295358-48-4P

RL: IMF (Industrial manufacture); POF (Polymer in formulation);
TEM (Technical or engineered material use); PREP (Preparation);
USES (Uses)

(heat-resistant polyimide or
polybenzoxazole compns. containing photopolymerable compds. for
elec. insulators)

IT 1171-47-7 89803-71-4

RL: RCT (Reactant); RACT (Reactant or reagent)

(heat-resistant polyimide or
polybenzoxazole compns. containing photopolymerable compds. for
elec. insulators)

L30 ANSWER 36 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:765537 CAPLUS

DOCUMENT NUMBER: 133:336006

TITLE: **Heat-resistant** branched polymer
compositions with low **dielectric** constant

INVENTOR(S): Tomikawa, Masao; Fujiwara, Takenori

PATENT ASSIGNEE(S): Toray Industries, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 14 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000302967	A2	20001031	JP 2000-36641	20000215

PRIORITY APPLN. INFO.: JP 1999-38472 A 19990217

AB The compns., useful for passivation films and interlayer insulation films,
contain polymers (A) containing 5-35 mol% C3-30 tri- or tetravalent
crosslinking groups, solid particles (B), and tertiary amines (C), where A
have structures selected from NHC:OQ1(CO2Q4)qC:ONH[Q2NHC:OQ3(CO2Q5)rC:O]pN
H, NHC:OQ5C:O[NHQ7(ZH)tNHC:OQ8C:O]sNH, C:ONHQ9NHC:O[Q10(CO2Q12)vC:ONHQ11NH
C:O]u, and C:ONHQ13(ZH)xNH[C:OQ14C:ONHQ15(ZH)yNH]wC:O (Q1,3,10 =
C_{≥2} organic group with valence 3 or 4; Q2,6,8,9,11,14 = C_{≥2}
organic group with valence 2; Q4,5,12, = H, C1-10 organic group with valence 1;
Q3,5,7 = C_{≥2} organic group with valence 3-6; Z = O, S, NH; p, s, u, w
= 1-100; q, r, t, v, x, y = 1, 2). Thus, a test piece **manufactured**
from a polymer (**prepared** by polymerization of 3,4,4'-triaminodiphenyl

ether, pyromellitic anhydride, and 2,2'-dimethyl-4,4'-diaminobiphenyl and addition of aniline and 3-aminopropyltrimethoxysilane), FEP (PTFE-polypropylene sol), and lutidine showed **dielec.** constant 2.21, **heat resistance** 450°, and good scratch resistance and adhesion to a Si wafer.

IT 261620-17-1DP, 2,2'-Dimethyl-4,4'-diaminobiphenyl-pyromellitic anhydride-3,4,4'-triaminodiphenyl ether copolymer, reaction **products** with aniline and aminopropyltrimethoxysilane 304011-89-ODP, reaction **products** with phthalic anhydride and nadic anhydride

RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(heat- and scratch-resistant branched polymer compns. with low **dielec.** constant)

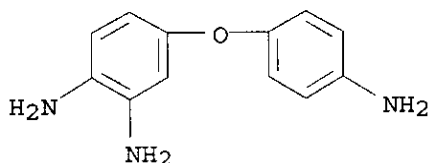
RN 261620-17-1 CAPLUS

CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with 4-(4-aminophenoxy)-1,2-benzenediamine and 2,2'-dimethyl[1,1'-biphenyl]-4,4'-diamine (9CI) (CA INDEX NAME)

CM 1

CRN 6264-66-0

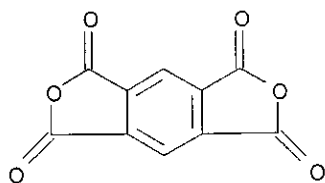
CMF C12 H13 N3 O



CM 2

CRN 89-32-7

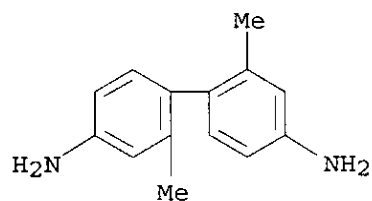
CMF C10 H2 O6



CM 3

CRN 84-67-3

CMF C14 H16 N2



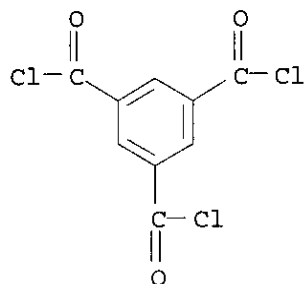
RN 304011-89-0 CAPLUS

CN 1,3,5-Benzenetricarbonyl trichloride, polymer with 1H,3H-benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, 2,2'-bis(trifluoromethyl)[1,1'-biphenyl]-4,4'-diamine and 2,2'-dimethyl[1,1'-biphenyl]-4,4'-diamine (9CI) (CA INDEX NAME)

CM 1

CRN 4422-95-1

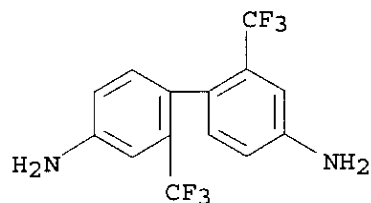
CMF C9 H3 Cl3 O3



CM 2

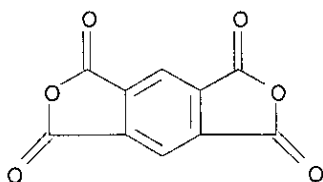
CRN 341-58-2

CMF C14 H10 F6 N2



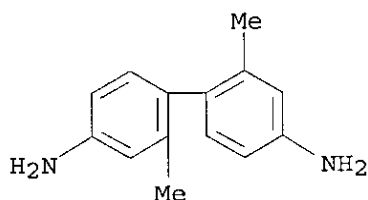
CM 3

CRN 89-32-7
CMF C10 H2 O6



CM 4

CRN 84-67-3
CMF C14 H16 N2



- IC ICM C08L077-00
ICS C08K003-00; C08K005-17; H01L021-312; C08G069-00
- CC 37-6 (Plastics Manufacture and Processing)
Section cross-reference(s): 76
- ST **heat resistance** branched polymer **elec**
insulator; step growth polymn polyimide aminopropyltrimethoxysilane
termination; scratch resistance **dielec** film semiconductor silica
- IT **Polybenzoxazoles**
Polybenzoxazoles
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP
(Properties); TEM (Technical or engineered material use); PREP
(Preparation); USES (Uses)
(fluorine-containing, **polybenzothiazole**-polyamic acid-polyether;
heat- and scratch-resistant branched polymer compns. with low
dielec. constant)
- IT Polyamic acids
Polyamic acids
Polyimides, **preparation**
Polyimides, **preparation**
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP
(Properties); TEM (Technical or engineered material use); PREP
(Preparation); USES (Uses)
(fluorine-containing; heat- and scratch-resistant branched polymer compns.
with low **dielec.** constant)

- IT Abrasion-resistant materials
 Electric insulators
Electronic packaging materials
 Heat-resistant materials
Semiconductor devices
 (heat- and scratch-resistant branched polymer compns. with low
 dielec. constant)
- IT **Polybenzoxazoles**
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP
(Properties); TEM (Technical or engineered material use); PREP
(Preparation); USES (Uses)
 (heat- and scratch-resistant branched polymer compns. with low
 dielec. constant)
- IT Fluoropolymers, uses
RL: MOA (Modifier or additive use); USES (Uses)
 (heat- and scratch-resistant branched polymer compns. with low
 dielec. constant)
- IT Adhesives
 (**heat-resistant**; heat- and scratch-resistant
 branched polymer compns. with low **dielec.** constant)
- IT Polyketones
Polyketones
Polyketones
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP
(Properties); TEM (Technical or engineered material use); PREP
(Preparation); USES (Uses)
 (polyamic acid-, fluorine-containing; heat- and scratch-resistant branched
 polymer compns. with low **dielec.** constant)
- IT **Polyamides, preparation**
 Polyamides, preparation
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP
(Properties); TEM (Technical or engineered material use); PREP
(Preparation); USES (Uses)
 (polyamic acid-, fluoropolymer-; heat- and scratch-resistant branched
 polymer compns. with low **dielec.** constant)
- IT Fluoropolymers, **preparation**
Fluoropolymers, **preparation**
Polyethers, **preparation**
Polyethers, **preparation**
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP
(Properties); TEM (Technical or engineered material use); PREP
(Preparation); USES (Uses)
 (polyamic acid-; heat- and scratch-resistant branched polymer compns.
 with low **dielec.** constant)
- IT Fluoropolymers, **preparation**
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP
(Properties); TEM (Technical or engineered material use); PREP
(Preparation); USES (Uses)
 (polyamic acid-polyketone-; heat- and scratch-resistant branched
 polymer compns. with low **dielec.** constant)
- IT **Polybenzoxazoles**
 Polybenzoxazoles

Polybenzoxazoles

Polyimides, **preparation**

Polyimides, **preparation**

Polyimides, **preparation**

RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyamide-, fluorine-containing; heat- and scratch-resistant branched polymer compns. with low **dielec.** constant)

IT Polyamic acids

Polyamic acids

RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyamide-, fluoropolymer-; heat- and scratch-resistant branched polymer compns. with low **dielec.** constant)

IT Fluoropolymers, **preparation**

RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyamide-**polybenzoxazole**-; heat- and scratch-resistant branched polymer compns. with low **dielec.** constant)

IT Fluoropolymers, **preparation**

RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyamide-polyimide-; heat- and scratch-resistant branched polymer compns. with low **dielec.** constant)

IT **Polyamides, preparation**

Polyamides, preparation

Polyamides, preparation

RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(**polybenzoxazole**-, fluorine-containing; heat- and scratch-resistant branched polymer compns. with low **dielec.** constant)

IT Fluoropolymers, **preparation**

Fluoropolymers, **preparation**

RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(**polybenzoxazole**-, **polybenzothiazole**-polyamic acid-polyether; heat- and scratch-resistant branched polymer compns. with low **dielec.** constant)

IT Polyimides, **preparation**

Polyimides, **preparation**

Polyimides, **preparation**

RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyether-, fluorine-containing, **polybenzothiazole**-

- polybenzoxazole-**; heat- and scratch-resistant branched polymer compns. with low **dielec.** constant)
- IT Polyamic acids
Polyamic acids
Polyimides, **preparation**
Polyimides, **preparation**
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-; heat- and scratch-resistant branched polymer compns. with low **dielec.** constant).
- IT Fluoropolymers, **preparation**
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-polyimide-, **polybenzothiazole-**
polybenzoxazole-; heat- and scratch-resistant branched polymer compns. with low **dielec.** constant)
- IT Polyethers, **preparation**
Polyethers, **preparation**
Polyethers, **preparation**
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyimide-, fluorine-containing, **polybenzothiazole-**
polybenzoxazole-; heat- and scratch-resistant branched polymer compns. with low **dielec.** constant)
- IT Polyamides, **preparation**
Polyamides, **preparation**
Polyamides, **preparation**
Polyketones
Polyketones
Polyketones
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyimide-, fluorine-containing; heat- and scratch-resistant branched polymer compns. with low **dielec.** constant)
- IT Fluoropolymers, **preparation**
Fluoropolymers, **preparation**
Polyethers, **preparation**
Polyethers, **preparation**
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyimide-; heat- and scratch-resistant branched polymer compns. with low **dielec.** constant)
- IT Fluoropolymers, **preparation**
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyimide-polyketone-; heat- and scratch-resistant branched polymer

- compns. with low **dielec.** constant)
- IT Polyamic acids
Polyamic acids
Polyamic acids
Polyimides, **preparation**
Polyimides, **preparation**
Polyimides, **preparation**
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyketone-, fluorine-containing; heat- and scratch-resistant branched polymer compns. with low **dielec.** constant)
- IT Amines, uses
RL: MOA (Modifier or additive use); USES (Uses)
(tertiary; heat- and scratch-resistant branched polymer compns. with low **dielec.** constant)
- IT 7631-86-9, Silica, uses
RL: MOA (Modifier or additive use); USES (Uses)
(Oscal NP 45; heat- and scratch-resistant branched polymer compns. with low **dielec.** constant)
- IT 1314-23-4, Zirconia, uses
RL: MOA (Modifier or additive use); USES (Uses)
(Torayceram; heat- and scratch-resistant branched polymer compns. with low **dielec.** constant)
- IT 62-53-3DP, Aniline, reaction **products** with polyimides
85-44-9DP, Phthalic anhydride, reaction **products** with polyimides
98-88-4DP, Benzoyl chloride, reaction **products** with polyimides
108-31-6DP, Maleic anhydride, reaction **products** with polyimides
129-64-6DP, Nadic acid anhydride, reaction **products** with polyimides 919-30-2DP, 3-Aminopropyltriethoxysilane, reaction **products** with polyimides 13822-56-5DP, 3-Aminopropyltrimethoxysilane, reaction **products** with polyimides 14235-81-5DP, 4-Ethynylaniline, reaction **products** with polyimides 158828-97-8DP, reaction **products** with polyimides **261620-17-1DP**, 2,2'-Dimethyl-4,4'-diaminobiphenyl-pyromellitic anhydride-3,4,4'-triaminodiphenyl ether copolymer, reaction **products** with aniline and aminopropyltrimethoxysilane **261620-22-8DP**, 3,3',4,4'-Benzophenonetetracarboxylic dianhydride-3,3',4,4'-biphenyltetracarboxylic dianhydride-2,2'-bis(trifluoromethyl)-4,4'-diaminodiphenyl-pyromellitic anhydride-tris(4-aminophenyl)methane copolymer, reaction **products** with aminopropyltriethoxysilane and aniline 304011-87-8DP, reaction **products** with maleic anhydride and phthalic anhydride 304011-88-9DP, reaction **products** with maleic anhydride, phthalic anhydride, and trimethoxysilylphthalic anhydride **304011-89-0DP**, reaction **products** with phthalic anhydride and nadic anhydride 304011-92-5DP, reaction **products** with ethynylaniline, aminopropyltriethoxysilane, and aniline 304011-94-7DP, reaction **products** with benzoyl chloride, maleic anhydride, and trimethoxysilylphthalic anhydride 304011-97-0DP, reaction **products** with benzoyl chloride, aminopropyltriethoxysilane, ethynylaniline, and aniline 304011-99-2P
RL: **IMF** (Industrial manufacture); POF (Polymer in formulation);

PRP (Properties); TEM (Technical or engineered material use); **PREP**
(**Preparation**); USES (Uses)

(heat- and scratch-resistant branched polymer compns. with low
dielec. constant)

IT 5981-09-9P, Tris(4-aminophenyl)amine

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)

(heat- and scratch-resistant branched polymer compns. with low
dielec. constant)

IT 100-37-8, Diethylaminoethanol 105-16-8, Diethylaminoethyl methacrylate

110-86-1, Pyridine, uses 121-44-8, uses 1306-38-3, Ceria, uses

1421-89-2, Dimethylaminoethyl acetate 2867-47-2 9002-84-0, Polyflon

TFE 25067-11-2, FEP 27175-64-0, Lutidine 99685-96-8,

[5,6]Fullerene-C60-Ih 131159-39-2, Fullerene

RL: MOA (Modifier or additive use); USES (Uses)

(heat- and scratch-resistant branched polymer compns. with low
dielec. constant)

IT 603-34-9 7697-37-2, Nitric acid, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)

(heat- and scratch-resistant branched polymer compns. with low
dielec. constant)

L30 ANSWER 37 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:674186 CAPLUS

DOCUMENT NUMBER: 133:253323

TITLE: **Heat-resistant resin precursor**
compositions and **preparation of heat**
-resistant resins therefrom

INVENTOR(S): Eguchi, Toshimasa; Murata, Mitsuru

PATENT ASSIGNEE(S): Sumitomo Bakelite Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000265057	A2	20000926	JP 1999-69882	19990316
PRIORITY APPLN. INFO.:			JP 1999-69882	19990316

AB Title compns. comprise (A) **heat-resistant resin**
precursors which form **heat-resistant resins** by thermal
reaction, preferably polyimides or **polybenzoxazoles**, and (B)
solvents having b.p. higher than the temperature where the precursors react to
form **heat-resistant resins** and lower than the glass
transition temperature of the **heat-resistant resins**. Thus,
10.0 g polyamic acid (temperature to form polyimide 220°, Tg of polyimide
345°) obtained from 2,2-bis(4-(4,4'-aminophenoxy)phenyl)hexafluorop
ropene 5.18, 2,2'-bis(trifluoromethyl)-4,4'-diaminobiphenyl 9.60,
pyromellitic dianhydride 6.54, and hexafluoroisopropylidene-2,2-
bis(phthalic anhydride) 4.44 g was dissolved in 40.0 g NMP and 6.0 g

2-phenoxyethanol (b.p. 245°) was added to give a **heat-resistant** resin precursor. The precursor was spin coated on a silicon wafer with a Cr layer and heat cured to give a 0.8 μm-thick **heat-resistant** resin film showing **dielec.** constant 2.4.

IT 295358-48-4P 295358-49-5P

RL: IMF (Industrial manufacture); PRP (Properties); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(preparation of polyimide or polybenzoxazole
heat-resistant resins and their precursor compns.)

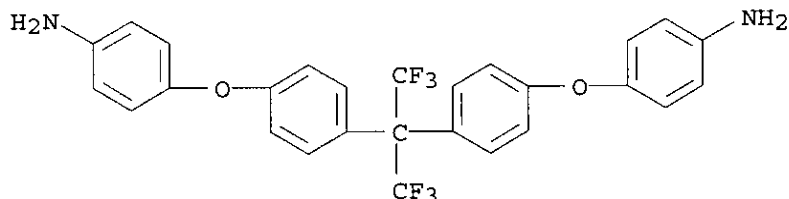
RN 295358-48-4 CAPLUS

CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with
2,2'-bis(trifluoromethyl) [1,1'-biphenyl]-4,4'-diamine,
5,5'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[1,3-
isobenzofurandione] and 4,4'-[[2,2,2-trifluoro-1-
(trifluoromethyl)ethylidene]bis(4,1-phenyleneoxy)]bis[benzenamine] (9CI)
(CA INDEX NAME)

CM 1

CRN 69563-88-8

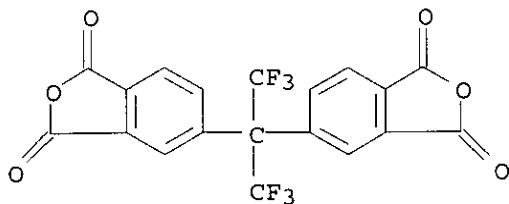
CMF C27 H20 F6 N2 O2



CM 2

CRN 1107-00-2

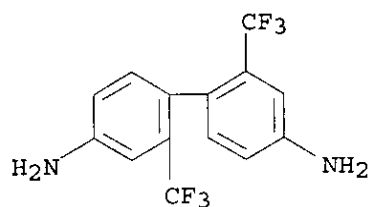
CMF C19 H6 F6 O6



CM 3

CRN 341-58-2

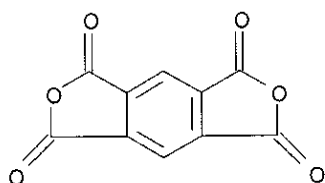
CMF C14 H10 F6 N2



CM 4

CRN 89-32-7

CMF C10 H2 O6



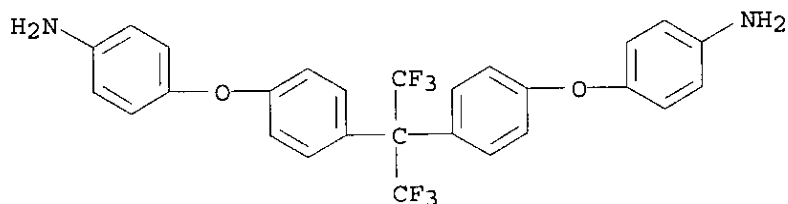
RN 295358-49-5 CAPLUS

CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with
3,3'-dimethyl[1,1'-biphenyl]-4,4'-diamine, 4,4'-oxybis[benzenamine],
5,5'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[1,3-
isobenzofurandione] and 4,4'-[[2,2,2-trifluoro-1-
(trifluoromethyl)ethylidene]bis(4,1-phenyleneoxy)]bis[benzenamine] (9CI)
(CA INDEX NAME)

CM 1

CRN 69563-88-8

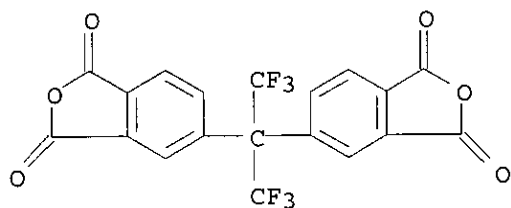
CMF C27 H20 F6 N2 O2



CM 2

CRN 1107-00-2

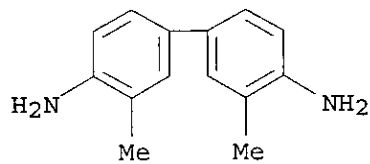
CMF C19 H6 F6 O6



CM 3

CRN 119-93-7

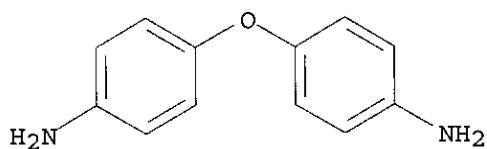
CMF C14 H16 N2



CM 4

CRN 101-80-4

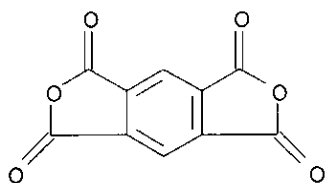
CMF C12 H12 N2 O



CM 5

CRN 89-32-7

CMF C10 H2 O6



- IC ICM C08L079-08
ICS C08G073-10; C08G073-22; C08L079-04; H01L021-312
- CC 37-6 (Plastics Manufacture and Processing)
Section cross-reference(s): 76
- ST polyimide **heat resistant** resin precursor;
polybenzoxazole **heat resistant** resin precursor
- IT **Heat-resistant materials**
(dielec.; preparation of polyimide or
polybenzoxazole **heat-resistant** resins and
their precursor compns.)
- IT **Polybenzoxazoles**
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or
engineered material use); PREP (Preparation); USES (Uses)
(fluorine-containing; preparation of polyimide or
polybenzoxazole **heat-resistant** resins and
their precursor compns.)
- IT **Polyamides, preparation**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(fluorine-containing; preparation of polyimide or
polybenzoxazole **heat-resistant** resins and
their precursor compns.)
- IT **Electric insulators**
(**heat-resistant**; preparation of polyimide or
polybenzoxazole **heat-resistant** resins and
their precursor compns.)
- IT **Polyethers, preparation**
Polyethers, **preparation**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(polyamic acid-, fluorine-containing; preparation of polyimide or
polybenzoxazole **heat-resistant** resins and
their precursor compns.)
- IT **Fluoropolymers, preparation**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(polyamic acid-polyether-; preparation of polyimide or
polybenzoxazole **heat-resistant** resins and
their precursor compns.)
- IT **Fluoropolymers, preparation**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(polyamide-; preparation of polyimide or polybenzoxazole

heat-resistant resins and their precursor compns.)

IT Fluoropolymers, **preparation**

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polybenzoxazole-; **preparation** of polyimide or
polybenzoxazole **heat-resistant** resins and
their precursor compns.)

IT Polyimides, **preparation**

Polyimides, **preparation**

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyether-, fluorine-containing; **preparation** of polyimide or
polybenzoxazole **heat-resistant** resins and
their precursor compns.)

IT Polyamic acids

Polyamic acids

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(polyether-, fluorine-containing; **preparation** of polyimide or
polybenzoxazole **heat-resistant** resins and
their precursor compns.)

IT Fluoropolymers, **preparation**

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyether-polyimide-; **preparation** of polyimide or
polybenzoxazole **heat-resistant** resins and
their precursor compns.)

IT Polyethers, **preparation**

Polyethers, **preparation**

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyimide-, fluorine-containing; **preparation** of polyimide or
polybenzoxazole **heat-resistant** resins and
their precursor compns.)

IT Polybenzoxazoles

Polyimides, **preparation**

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(**preparation** of polyimide or polybenzoxazole
heat-resistant resins and their precursor compns.)

IT Polyamic acids

Polyamides, preparation

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(**preparation** of polyimide or polybenzoxazole
heat-resistant resins and their precursor compns.)

IT 1171-47-7 7719-09-7, Thionyl chloride

RL: RCT (Reactant); RACT (Reactant or reagent)

(in monomer **preparation**; **preparation** of polyimide or
polybenzoxazole **heat-resistant** resins and
their precursor compns.)

IT 1102-92-7P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(monomer; **preparation of polyimide or polybenzoxazole heat-resistant** resins and their precursor compns.)

IT 122-99-6, 2-Phenoxyethanol 143-22-6, Triethylene glycol monobutyl ether
143-24-8, Tetraethylene glycol dimethyl ether

RL: NUU (Other use, unclassified); USES (Uses)

(precursor composition solvent; **preparation of polyimide or polybenzoxazole heat-resistant** resins and their precursor compns.)

IT 112513-26-5P 295358-48-4P 295358-49-5P

RL: IMF (Industrial manufacture); PRP (Properties); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(**preparation of polyimide or polybenzoxazole heat-resistant** resins and their precursor compns.)

IT 112480-81-6P

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(**preparation of polyimide or polybenzoxazole heat-resistant** resins and their precursor compns.)

IT 113716-09-9P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(**preparation of polyimide or polybenzoxazole heat-resistant** resins and their precursor compns.)

L30 ANSWER 38 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:452514 CAPLUS

DOCUMENT NUMBER: 133:59253

TITLE: Naphthalene-based **polybenzoxazole** precursors and **heat-resistant electrically insulating polybenzoxazoles** therefrom

INVENTOR(S): Eguchi, Toshimasa; Higashida, Yukihiro; Yamaji, Takashi

PATENT ASSIGNEE(S): Sumitomo Bakelite Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 4

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
JP 2000186145	A2	20000704	JP 1998-365685	19981222
US 6297351	B1	20011002	US 1999-465004	19991216
PRIORITY APPLN. INFO.:			JP 1998-359561	A 19981217
			JP 1998-365684	A 19981222
			JP 1998-365685	A 19981222
			JP 1998-365686	A 19981222

GI

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB The precursors, useful for semiconductor devices, have repeating units I, II, III,, IV, or V (R1 = F, fluoroalkyl; R2-4 = H, F, fluoroalkyl; R5,6 = H, organic group; X = multifunctional organic group; n = 1-1000). Thus, a varnish containing a reaction **product** of 5.24 g 2,7-diamino-3,6-dihydroxytetrafluoronaphthalene and 8.58 g 4,4'-(hexafluoroisopropylidene)dibenzoyl chloride was molded into a film and heated to give a test piece showing **dielec.** constant 2.5 and glass-transition temperature 419°.

IT 276873-48-4P 276873-51-9P 276873-53-1P

RL: **IMF** (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); **PREP** (Preparation); USES (Uses)

(heat-resistant elec. insulating
polybenzoxazoles prepared from naphthalene ring-based
fluorinated precursors for semiconductor devices)

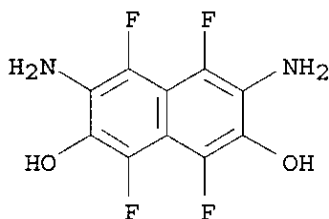
RN 276873-48-4 CAPLUS

CN Benzoyl chloride, 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis-, polymer with 3,6-diamino-1,4,5,8-tetrafluoro-2,7-naphthalenediol (9CI) (CA INDEX NAME)

CM 1

CRN 276873-47-3

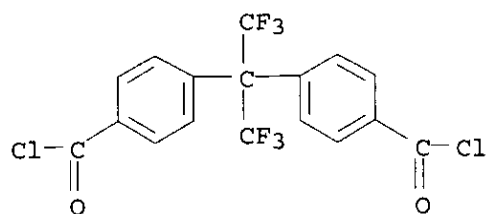
CMF C10 H6 F4 N2 O2



CM 2

CRN 1102-92-7

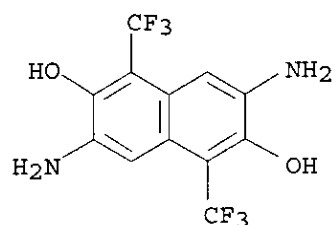
CMF C17 H8 Cl2 F6 O2



RN 276873-51-9 CAPLUS
 CN 1,3-Benzenedicarbonyl dichloride, 2,4,5,6-tetrafluoro-, polymer with
 3,7-diamino-1,5-bis(trifluoromethyl)-2,6-naphthalenediol (9CI) (CA INDEX
 NAME)

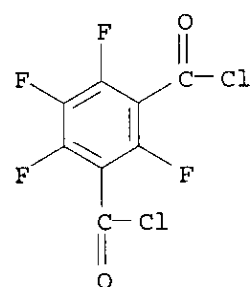
CM 1

CRN 276873-50-8
 CMF C12 H8 F6 N2 O2



CM 2

CRN 110649-97-3
 CMF C8 C12 F4 O2

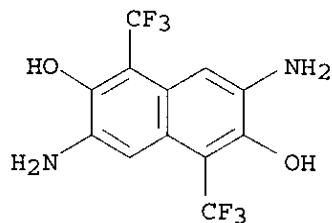


RN 276873-53-1 CAPLUS
 CN Benzoyl chloride, 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis-
 , polymer with 3,7-diamino-1,5-bis(trifluoromethyl)-2,6-naphthalenediol
 (9CI) (CA INDEX NAME)

CM 1

CRN 276873-50-8

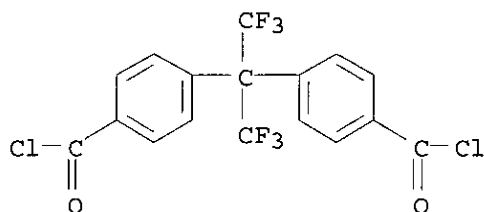
CMF C12 H8 F6 N2 O2



CM 2

CRN 1102-92-7

CMF C17 H8 Cl2 F6 O2



IC ICM C08G073-22

CC 35-5 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 76

ST **elec** insulator aminohydroxyfluoronaphthalene
carboxyphenylfluoropropane **polybenzoxazole** semiconductor;
heat resistance fluorinated polynaphthoxazole precursor

IT **Electric** insulators

Heat-resistant materials

(**heat-resistant elec.** insulating

polybenzoxazoles prepared from naphthalene ring-based
fluorinated precursors for semiconductor devices)

IT Fluoropolymers, **preparation**

Polybenzoxazoles

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or
engineered material use); PREP (Preparation); USES (Uses)

(**heat-resistant elec.** insulating

polybenzoxazoles prepared from naphthalene ring-based
fluorinated precursors for semiconductor devices)

IT **Polyamides, preparation**

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or

- engineered material use); PREP (Preparation); USES (Uses)
 (precursors; **heat-resistant elec.**
 insulating **polybenzoxazoles prepared** from naphthalene
 ring-based fluorinated precursors for semiconductor devices)
- IT 1102-92-7P, 4,4'-(Hexafluoroisopropylidene)dibenzoyl chloride
 1551-39-9P, Tetrafluoroisophthalic acid 110649-97-3P
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
 (Reactant or reagent)
 (for precursor **preparation; heat-resistant**
elec. insulating polybenzoxazoles prepared
 from naphthalene ring-based fluorinated precursors for semiconductor
 devices)
- IT 1171-47-7, 4,4'-(Hexafluoroisopropylidene)dibenzoic acid 2377-81-3,
 1,3-Dicyanotetrafluorobenzene 7719-09-7, Thionyl chloride
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (for precursor **preparation; heat-resistant**
elec. insulating polybenzoxazoles prepared
 from naphthalene ring-based fluorinated precursors for semiconductor
 devices)
- IT 91-20-3DP, Naphthalene, tetra(trifluoromethyl)diaminodihydroxy derivs.,
 polymers with diaminodihydroxybiphenyl and (hexafluoroisopropylidene)diben
 zoyl chloride copolymer, **preparation** 1102-92-7DP,
 4,4'-(Hexafluoroisopropylidene)dibenzoyl chloride, polymers with
 diaminodihydroxybiphenyl and tetra(trifluoromethyl)diaminodihydroxynaphtha
 lene 4194-40-5DP, 3,3'-Diamino-4,4'-dihydroxybiphenyl, polymers with
 tetra(trifluoromethyl)diaminodihydroxynaphthalene and
 (hexafluoroisopropylidene)dibenzoyl chloride 276873-48-4P
 276873-49-5P 276873-51-9P 276873-52-0P 276873-53-1P
 276873-54-2P
 RL: IMF (Industrial manufacture); PRP (Properties); TEM
 (Technical or engineered material use); PREP (Preparation); USES
 (Uses)
 (**heat-resistant elec. insulating**
polybenzoxazoles prepared from naphthalene ring-based
 fluorinated precursors for semiconductor devices)

L30 ANSWER 39 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 1994:55331 CAPLUS
 DOCUMENT NUMBER: 120:55331
 TITLE: **Heat-resistant** phenylquinoxaline
 copolymers useful as **dielectrics**
 INVENTOR(S): Ahne, Hellmut; Zapf, Lothar
 PATENT ASSIGNEE(S): Siemens A.-G., Germany
 SOURCE: Eur. Pat. Appl., 12 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----

EP 544165 A1 19930602 EP 1992-119492 19921113
 EP 544165 B1 19960605
 R: DE, FR, GB, IT, NL, SE
 JP 05295114 A2 19931109 JP 1992-335570 19921120
 US 5278277 A 19940111 US 1992-982191 19921125

PRIORITY APPLN. INFO.: DE 1991-4138862 19911126

AB Phenylquinoxaline polymers of specified structure, with good **elec**
 . and thermal properties and processable in nontoxic solvents, are
prepared Condensing 1 mol 4,4''-oxydibenzil with 1 mol
 3,4-diaminobenzoic acid gave 2,2'-(oxydi-1,4-phenylene)bis(3-phenyl-6-
 quinoxalinecarboxylic acid) which was converted to the diacid chloride (I)
 with SOCl₂. Polymerizing I with 3,3'-dihydroxybenzidine gave a polyamide with
dielec. constant (1 kHz, 25°) 3.03, tan δ 0.0013, and
elec. resistance 1.3 + 10¹⁸ Ω-cm, which could be
 cyclized at .apprx.400° to form benzoxazole groups.

IT 152289-94-6P

RL: IMF (Industrial manufacture); PREP (Preparation)
 (manufacture of heat-resistant, with good
dielec. properties)

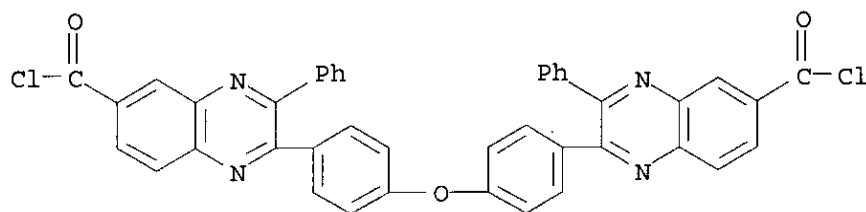
RN 152289-94-6 CAPLUS

CN 6-Quinoxalinecarbonyl chloride, 2,2'-(oxydi-4,1-phenylene)bis[3-phenyl-,
 polymer with 4,4'-diamino[1,1'-biphenyl]-3,3'-diol (9CI) (CA INDEX NAME)

CM 1

CRN 152289-93-5

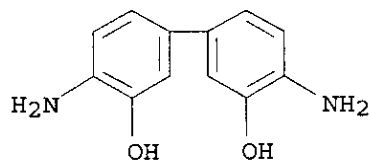
CMF C42 H24 Cl2 N4 O3



CM 2

CRN 2373-98-0

CMF C12 H12 N2 O2



IC ICM C08G073-06
ICS C08G073-10; H01B003-30

CC 35-5 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 76

ST phenylquinoxaline polymer **heat resistance**; quinoxaline
polymer **heat resistance**; **dielec**
phenylquinoxaline polymer; oxydibenzil reaction diaminobenzoic acid;
dihydroxybenzidine copolymer; benzoxazole deriv polymer

IT Polyquinoxalines
RL: IMF (Industrial manufacture); PREP (Preparation)
(**manufacture of heat-resistant**, with good
dielec. properties)

IT **Heat-resistant** materials
(phenylquinoxaline polymers, **manufacture of**)

IT **Electric insulators and Dielectrics**
(phenylquinoxaline polymers, **manufacture of heat-**
resistant)

IT Polyquinoxalines
RL: IMF (Industrial manufacture); PREP (Preparation)
(polyamide-, **manufacture of heat-resistant**,
with good **dielec.** properties)

IT Polyquinoxalines
RL: IMF (Industrial manufacture); PREP (Preparation)
(polybenzoxazole-, **manufacture of heat-**
resistant, with good **dielec.** properties)

IT **Polyamides, preparation**
Polybenzoxazoles
RL: IMF (Industrial manufacture); PREP (Preparation)
(polyquinoxaline-, **manufacture of heat-resistant**
, with good **dielec.** properties)

IT 19609-85-9DP, 5H-Isoindolo[2,1-a]benzimidazole, derivs., polymers
147212-00-8P 152289-94-6P 152326-28-8P 152326-29-9P
RL: IMF (Industrial manufacture); PREP (Preparation)
(**manufacture of heat-resistant**, with good
dielec. properties)

IT 147233-57-6P
RL: PREP (Preparation)
(**preparation of**)

IT 21454-19-3
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with diaminobenzoic acid)

IT 619-05-6, 3,4-Diaminobenzoic acid
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with oxydibenzil)

L30 ANSWER 40 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1990:572928 CAPLUS

DOCUMENT NUMBER: 113:172928

TITLE: Copolymers containing **polybenzoxazole**,
polybenzothiazole and polybenzimidazole
moieties

INVENTOR(S): Harris, William J.; Hwang, Wen Fang

PATENT ASSIGNEE(S): Dow Chemical Co., USA
 SOURCE: PCT Int. Appl., 212 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 3
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9003995	A1	19900419	WO 1989-US4464	19891006
W: JP, KR				
RW: AT, BE, CH, DE, FR, GB, IT, LU, NL, SE				
US 5089568	A	19920218	US 1988-256338	19881011
US 5030706	A	19910709	US 1989-327925	19890323
US 5110894	A	19920505	US 1989-378360	19890707
US 5151489	A	19920929	US 1989-407973	19890915
EP 392008	A1	19901017	EP 1989-912725	19891006
R: BE, CH, DE, FR, GB, IT, LI, NL				
JP 03501751	T2	19910418	JP 1989-511754	19891006
PRIORITY APPLN. INFO.:			US 1988-256338	19881011
			US 1989-327925	19890323
			US 1989-378360	19890707
			US 1989-407973	19890915
			WO 1989-US4464	19891006

AB A block copolymer comprises a (1) polybenzazole block having ≥ 10 -mer units; and (2) a thermoplastic block linked to the polybenzazole block containing a polyamide, polyimide, polyquinoxaline, polyquinoline, poly(aromatic ketone), poly(aromatic sulfone) or aromatic ether (co)polymer of ≥ 1 of those polymers, with 2 comprising ≥ 2 -mer units or having an average formula weight .apprx.800. A dope from 4,6-diaminoresorcinol-2HCl 75 g and terephthaloyl chloride (I) 69.3 g was **prepared** in polyphosphoric acid 314 g containing 76 weight% P2O5 under N. Heating at 95°, adding 179 g P2O5, and continuing the reaction with stirring for 8 h at 95° and 16 h at 150° and 24 h at 190° gave dope which was stored under N. A polyamide was **prepared** from I 14.10 in 400 mL N-methylpyrrolidinone (II) and bis(4-aminophenyl) ether 13.49 and CaCl2 4.29 g, followed by washing with 100 mL of II. The polyamide was precipitated and collected (20.49 g). The polyamide 3 g and 15.05 g of the dope were added with stirring to 84 g 10:1 MeSO3H-P2O5 mixture Heating 16 h at 70° and 48 h at 90° gave the **cis-polybenzoxazole-polyamide** block copolymer with inherent viscosity 4.07 dL/g.

IT 129844-92-4P

RL: PREP (Preparation)
 (preparation of, ring closure in)

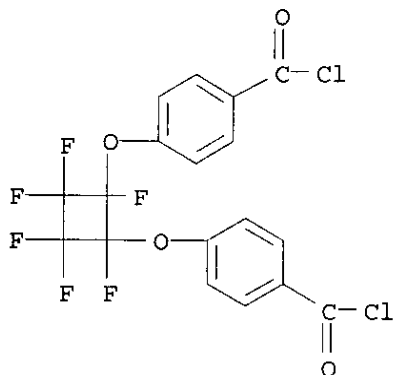
RN 129844-92-4 CAPLUS

CN 1,4-Benzenedicarbonyl dichloride, polymer with 4,6-diamino-1,3-benzenediol dihydrochloride, 1,4-diphenoxybenzene and 4,4'-[(1,2,3,3,4,4-hexafluoro-1,2-cyclobutanediyl)bis(oxy)]bis[benzoyl chloride], block (9CI) (CA INDEX NAME)

CM 1

CRN 129844-91-3

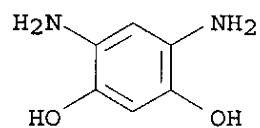
CMF C18 H8 C12 F6 O4



CM 2

CRN 16523-31-2

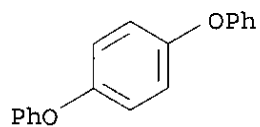
CMF C6 H8 N2 O2 . 2 Cl H


$$\bullet_2 \text{ HCl}$$

CM 3

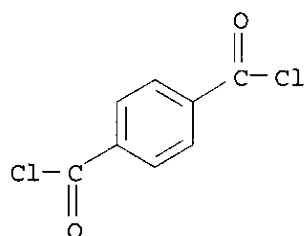
CRN 3061-36-7

CMF C18 H14 O2



CM 4

CRN 100-20-9
CMF C8 H4 Cl2 O2



- IC ICM C08G075-32
- ICS C08G073-22; C08G073-18
- CC 35-3 (Chemistry of Synthetic High Polymers)
- Section cross-reference(s): 40
- ST **polybenzoxazole** polyamide block; ring closure block polymn
- IT Coating materials
- (polybenzazole block copolymers)
- IT Synthetic fibers
- RL: PREP (Preparation)
- (**polybenzoxazole** block copolymers, **preparation** of)
- IT Polymerization
- (cyclo-, in **preparation** of block polybenzazoles)
- IT Polyketones
- RL: PREP (Preparation)
- (polyamide-**polybenzoxazole**-, **preparation** of, ring closure in)
- IT Polyimides, **preparation**
- RL: PREP (Preparation)
- (polyamide-**polybenzoxazole**-, block, **preparation** and characterization of)
- IT Polyketones
- RL: PREP (Preparation)
- (polyamide-**polybenzoxazole**-, block, fiber, **preparation** and characterization of)
- IT Synthetic fibers, polymeric
- RL: PREP (Preparation)
- (polyamide-**polybenzoxazole**-polyketones, block, **prepn** . and characterization of)
- IT Synthetic fibers, polymeric
- RL: PREP (Preparation)
- (polyamide-polyoxazoles, **preparation** of, characterization in)
- IT **Polyamides, preparation**
- RL: PREP (Preparation)
- (**polybenzoxazole**-, **preparation** of, ring closure in)
- IT **Polyamides, preparation**
- RL: PREP (Preparation)
- (**polybenzoxazole**-polyimide-, block, **preparation** and

- characterization of)
- IT **Polyamides, preparation**
 RL: PREP (Preparation)
 (polybenzoxazole-polyketone-, preparation of, ring closure in)
- IT Polyamide fibers, **preparation**
 RL: PREP (Preparation)
 (polybenzoxazole-polyketone-, block, preparation and characterization of)
- IT Synthetic fibers, polymeric
 RL: PREP (Preparation)
 (polybenzoxazoles, block, preparation of)
- IT Polyamide fibers, **preparation**
 RL: PREP (Preparation)
 (polyoxazole-, preparation of, characterization in)
- IT **Electric circuits**
 (printed, boards, laminates for, polybenzazole block copolymers as)
- IT 24938-60-1P 25035-33-0P 25668-34-2P 26101-19-9P 26809-79-0P
 26854-93-3P 28576-59-2P 53302-20-8P 60871-72-9P 66536-08-1P
 109779-83-1P 129807-61-0P 129844-89-9P 129844-99-1P 130043-91-3P
 RL: RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (preparation and block polymerization of)
- IT 3232-24-4P 130043-89-9P
 RL: RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (preparation and chlorination of)
- IT 130043-93-5P
 RL: RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (preparation and cyclization of)
- IT 65012-57-9P 99113-99-2P 129844-91-3P
 RL: RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (preparation and polymerization of)
- IT 3769-82-2P 50434-36-1P, 4-Nitrophenylacetyl chloride
 RL: RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (preparation and reaction of)
- IT 22711-24-6P, 4-Nitrobenzil
 RL: RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (preparation and reaction of, with hydroquinone and phenoxyphenol)
- IT 123-31-9P, 1,4-Benzenediol, **preparation**
 RL: RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (preparation and reaction of, with nitrobenzil)
- IT 130043-92-4P
 RL: RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (preparation and reaction of, with zinc)
- IT 130043-87-7P
 RL: RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (preparation and sulfonation of)
- IT 121-63-1P 107873-45-0P 129807-62-1DP, cis derivs., polyamide-, block
 129923-04-2P 130043-88-8P 130043-90-2P
 RL: PREP (Preparation)
 (preparation of)
- IT 91-19-ODP, Quinoxaline, derivs., polymers 91-22-5DP, Quinoline, derivs.,
 polymers 69794-31-6P 77756-61-7P 129807-54-1P 129807-55-2P

129807-56-3P 129807-57-4P 129807-64-3P 129807-65-4P 129807-67-6P
 129807-68-7P 129844-87-7P 129844-88-8P 129844-90-2P
129844-92-4P 129844-93-5P 129844-95-7P 129844-96-8P
 129844-98-0P 129862-89-1P 129915-25-9P

RL: PREP (Preparation)

(preparation of, ring closure in)

- IT 7719-09-7, Thionyl chloride
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, with (phenoxyphenoxy)benzoic acid)
- IT 99-76-3
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, with 1,2-dibromotetrafluoroethane)
- IT 7790-94-5, Chlorosulfuric acid
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, with Me (phenoxyphenoxy)benzoate)
- IT 124-73-2, 1,2-Dibromotetrafluoroethane
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, with Me hydroxybenzoate)
- IT 831-82-3, 4-Phenoxyphenol
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, with Me nitrobenzoate)
- IT 101-84-8 3061-36-7, 1,4-Diphenoxybenzene
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, with chlorosulfonic acid)
- IT 7790-94-5, Chlorosulfuric acid
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, with diphenoxybenzene)
- IT 831-82-3, 4,-Phenoxyphenol
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, with nitrobenzil)
- IT 1204-28-0, Trimellitic anhydride acid chloride
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, with phenoxyaniline)
- IT 619-50-1, Methyl-4-nitrobenzoate
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, with phenoxyphenol)
- IT 104-03-0, 4-Nitrophenylacetic acid
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, with thionyl chloride)
- IT 139-59-3, 4-Phenoxyaniline
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, with trimellitic anhydride)

L30 ANSWER 41 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1981:48015 CAPLUS

DOCUMENT NUMBER: 94:48015

TITLE: Polyamic acids from diaminocarboxamides,
 diamines, and tetracarboxylic dianhydrides

INVENTOR(S): Makino, Daisuke; Suzuki, Hiroshi; Sato, Hidetaka

PATENT ASSIGNEE(S): Hitachi Chemical Co., Ltd., Japan

SOURCE: Ger. Offen., 18 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 3012952	A1	19801023	DE 1980-3012952	19800402
DE 3012952	C2	19880922		
JP 55144027	A2	19801110	JP 1979-41482	19790404
JP 57005407	B4	19820130		

PRIORITY APPLN. INFO.: JP 1979-41482 19790404

AB Polyimide-**polybenzoylenequinazolones** with improved **elec**
 . properties are **manufactured** by cyclizing polyamic acids from
 tetracarboxylic dianhydrides, diamines, and 5-20 mol% (based on diamine
 content) diaminocarboxamide. Thus, a polyamic acid was **prepared**
 from 4,4'-diaminodiphenyl ether 0.0475, 4,4'-diaminodiphenyl ether
 3-carboxamide (I) 0.0025, pyromellitic dianhydride 0.025, and
 3,3',4,4'-benzophenonetetracarboxylic dianhydride 0.025 mol in
 N-methylpyrrolidone, cast onto a glass plate, and heated 1 h each at
 100°, at 200°, and then at 350°, to give a 30 μ
 film with good phys. properties and **dielec.** strength (JIS K
 2110) 306 V/ μ m at 400°, compared with 271 V/ μ m for a control
prepared without I.

IT 72347-86-5P

RL: IMF (Industrial manufacture); PREP (Preparation)
 (manufacture of, with improved **dielec.** strength)

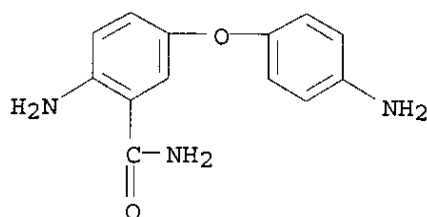
RN 72347-86-5 CAPLUS

CN Benzamide, 2-amino-5-(4-aminophenoxy)-, polymer with 1,4-benzenediamine,
 1H,3H-benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone and 5,5'-carbonylbis[1,3-
 isobenzofurandione] (9CI) (CA INDEX NAME)

CM 1

CRN 40763-98-2

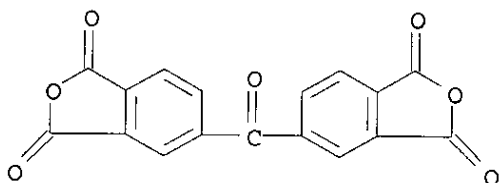
CMF C13 H13 N3 O2



CM 2

CRN 2421-28-5

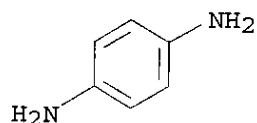
CMF C17 H6 O7



CM 3

CRN 106-50-3

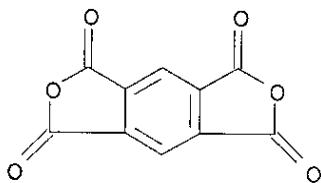
CMF C6 H8 N2



CM 4

CRN 89-32-7

CMF C10 H2 O6



IC C08G073-10; C08G073-06

CC 35-3 (Synthetic High Polymers)

ST dielec strength polyimide polybenzoylenequinazolone

IT Polyimides, preparation

(polybenzoylenequinazolone-, manufacture of, with improved elec. properties)

IT 55478-71-2P 72347-86-5P

RL: IMF (Industrial manufacture); PREP (Preparation)
(manufacture of, with improved dielec. strength)

L30 ANSWER 42 OF 42 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1980:181856 CAPLUS

DOCUMENT NUMBER: 92:181856

TITLE: Comparative study of the photodegradation of

polybenzoxazoles and related model compounds.
Stabilization of **polybenzoxazoles**

AUTHOR(S): Despax, B.; Paillous, N.; Lattes, A.; Paillous, A.
CORPORATE SOURCE: Lab. Composes Azotes Polyfonctionnels, Univ. Paul Sabatier, Toulouse, 31077, Fr.
SOURCE: Journal of Polymer Science, Polymer Chemistry Edition (1980), 18(2), 593-609
CODEN: JPLCAT; ISSN: 0449-296X
DOCUMENT TYPE: Journal
LANGUAGE: English

AB **Polybenzoxazoles** containing adamantane rings were **prepared** from dihydroxybenzidine, 1,3-dimethyl-5,7-adamantanedicarboxylic acid chloride, 4,4'-(1,3-dimethyl-5,7-adamantanediyl)bis(benzoyl chloride), and 1,3-dimethyl-5,7-bis(3-amino-4-hydrophenyl)adamantane and their photochem. degradation was compared to that of monomer model compds. Formation of Ni complexes increased the solar irradiation stability and decreased their fluorescence. The effects of impurities and structural features were discussed in relation to the use of the polymers as transparent coatings in spacecraft.

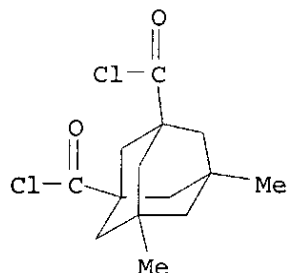
IT 51728-50-8P 56764-79-5P 73539-22-7DP, cyclized
73546-52-8P 73546-54-0P 73546-56-2DP, cyclized
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and photochem. degradation of)

RN 51728-50-8 CAPLUS

CN Tricyclo[3.3.1.1^{3,7}]decane-1,3-dicarbonyl dichloride, 5,7-dimethyl-, polymer with 4,4'-diamino[1,1'-biphenyl]-3,3'-diol (9CI) (CA INDEX NAME)

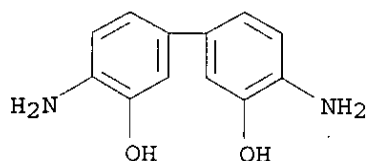
CM 1

CRN 23117-30-8
CMF C14 H18 Cl2 O2



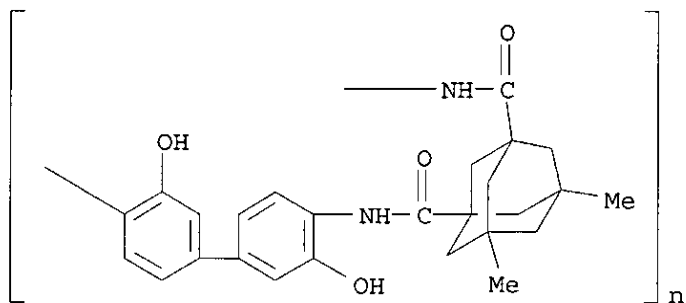
CM 2

CRN 2373-98-0
CMF C12 H12 N2 O2



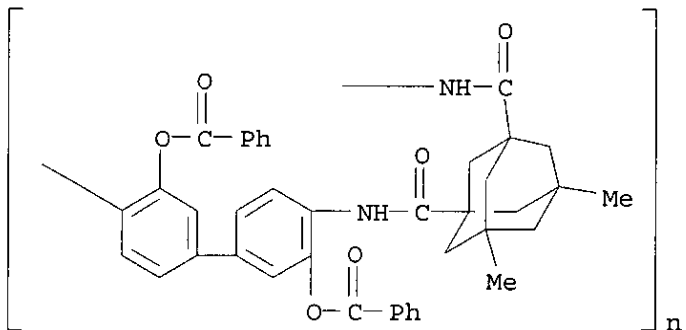
RN 56764-79-5 CAPLUS

CN Poly[iminocarbonyl (5,7-dimethyltricyclo[3.3.1.1^{3,7}]decane-1,3-diyl) carbonylimino (3,3'-dihydroxy[1,1'-biphenyl]-4,4'-diyl)] (9CI) (CA INDEX NAME)



RN 73539-22-7 CAPLUS

CN Poly[iminocarbonyl (5,7-dimethyltricyclo[3.3.1.1^{3,7}]decane-1,3-diyl) carbonylimino [3,3'-bis(benzoyloxy) [1,1'-biphenyl]-4,4'-diyl]] (9CI) (CA INDEX NAME)



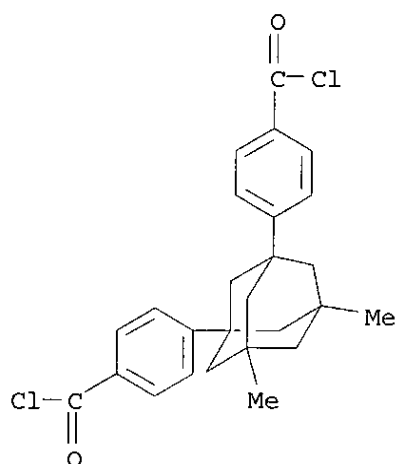
RN 73546-52-8 CAPLUS

CN Benzoyl chloride, 4,4'-(5,7-dimethyltricyclo[3.3.1.1^{3,7}]decane-1,3-diyl)bis-, polymer with 4,4'-diamino[1,1'-biphenyl]-3,3'-diol (9CI) (CA INDEX NAME)

CM 1

CRN 73546-51-7

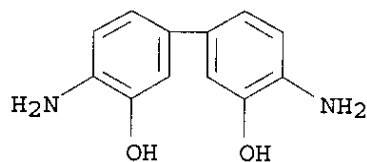
CMF C26 H26 Cl2 O2



CM 2

CRN 2373-98-0

CMF C12 H12 N2 O2



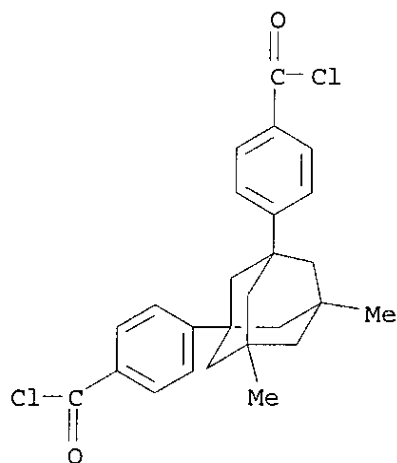
RN 73546-54-0 CAPLUS

CN Benzoyl chloride, 4,4'-(5,7-dimethyltricyclo[3.3.1.1.3,7]decane-1,3-diyl)bis-, polymer with 4,4'-(5,7-dimethyltricyclo[3.3.1.1.3,7]decane-1,3-diyl)bis[2-aminophenol] (9CI) (CA INDEX NAME)

CM 1

CRN 73546-51-7

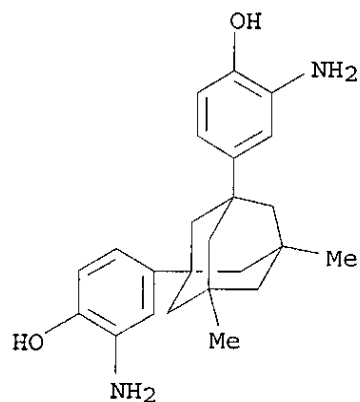
CMF C26 H26 Cl2 O2



CM 2

CRN 71316-56-8

CMF C24 H30 N2 O2



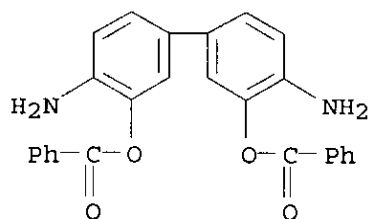
RN 73546-56-2 CAPLUS

CN Tricyclo[3.3.1.1.3,7]decane-1,3-dicarbonyl dichloride, 5,7-dimethyl-,
polymer with 4,4'-diamino[1,1'-biphenyl]-3,3'-diyl dibenzoate (9CI) (CA
INDEX NAME)

CM 1

CRN 73546-55-1

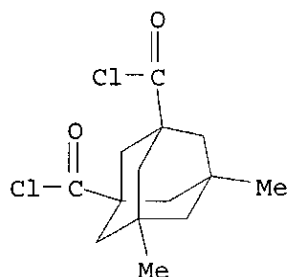
CMF C26 H20 N2 O4



CM 2

CRN 23117-30-8

CMF C14 H18 Cl2 O2



CC 35-6 (Synthetic High Polymers)

ST **polybenzoxazole** polyadamantane photodegrdn; radiation stability

polybenzoxazole polyadamantane; spacecraft coating

polybenzoxazole polyadamantane

IT Space vehicles

(coatings for, **polybenzoxazoles** containing adamantane rings as transparent)

IT Fluorescence

(of **polybenzoxazoles** containing adamantane groups, nickel complexation effect on)

IT **Polyamides**, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)

(adamantane group-containing, photochem. degradation of)

IT Light-resistant materials

(coatings, **polybenzoxazoles** containing adamantane groups)

IT Polymer degradation

(photochem., of benzoxazoles and **polybenzoxazoles** containing adamantane groups, nickel complexation effect on)

IT Degradation

(photochem., of benzoxazoles, nickel effect on)

IT Fries rearrangement

(photochem., of biphenyl diacetate adamantane derivative)

IT **Photoelectric** devices

(solar, coating for, **polybenzoxazoles** containing adamantane rings)

as transparent)
IT Coating materials
(transparent, **polybenzoxazoles** containing adamantane rings, for
spacecraft)
IT 833-50-1 1724-54-5 52725-81-2 73535-97-4 73535-98-5 73545-86-5
RL: RCT (Reactant); RACT (Reactant or reagent)
(photochem. degradation of)
IT 51728-50-8P 51728-75-7DP, nickel complexes 51728-75-7P
56764-79-5P 73539-22-7DP, cyclized 73539-23-8DP,
nickel complexes 73539-23-8P 73539-24-9P 73546-52-8P
73546-54-0P 73546-56-2DP, cyclized
RL: RCT (Reactant); SPN (Synthetic preparation); PREP
(Preparation); RACT (Reactant or reagent)
(preparation and photochem. degradation of)

=>